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THE ETIOLOGY OF HEART DISEASE

WITH SPECIAL REFERENCE TO THE PRESENT STATUS OF THE PREVENTION OF HEART DISEASE

HOWARD B. SPRAGUE, M.D.
AND
PAUL D. WHITE, M.D.
BOSTON

In the history of our knowledge of circulatory disease the nineteenth century contributed chiefly through its descriptions of structural change in the heart and blood vessels. The present century may become known as the one in which emphasis on causation led to the etiologic classification of heart disease and to the first steps in its prevention. This has proved already to have been a great advance and proceeds most decisively from the work of Cabot[1] in Boston. He attributed the four common types of heart disease to rheumatism, syphilis, hypertension and arteriosclerosis, and these remain the causes of nine tenths of the organic heart disease of the United States. In the remaining one tenth are found such diverse types of heart affliction as congenital, thyroid, acute and subacute bacterial, diphtheritic and toxic heart disease, and the damage to the heart produced by pulmonic hypertension, anemia, trauma, systemic disease and neoplasms. While it is true that heart disease is now thought of in terms of etiology as one of the elements of the triad of diagnosis—etiologic, structural and functional—one must not be satisfied to confuse knowledge with nomenclature, since it must be admitted that in the four major types of heart disease the pathogenesis is obscure in more than 90 per cent. The causes of rheumatism, hypertension and arteriosclerosis are unproved and in this ignorance of the causes lies to date much of the failure of preventive medicine in heart disease.

In the 10 per cent of heart disease with assorted etiology the possibility of prevention depends on the underlying conditions, many of which are remediable; but, except in goitrous districts with an abnormal incidence of thyroid heart disease, not one of these minor groups presents a public health problem of any great importance.

On the other hand, the four major groups constitute a preponderant problem since they are responsible for two and a quarter times as many deaths as their nearest rival, cancer. It appears not too optimistic, however, to believe that three of them—rheumatic, syphilitic and hypertensive—may eventually become amenable to preventive measures and that even the fourth—arteriosclerotic—may be so controlled that it will cause serious damage only in the aged.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. Cabot, R. C.: The Four Common Types of Heart Disease, J. A. M. A. **63**:1461 (Oct. 24) 1914.

RHEUMATIC HEART DISEASE

Rheumatic infection is a disease the cause of which has been "discovered" by many investigators; but unhappily each time it is a different cause and no one of them has as yet satisfied the criteria for final proof. The disease has not been reproduced unequivocally in animals, and disputes have arisen as to the pathognomonic changes in tissue that can be accepted as evidence of the disease. The Aschoff body, necrosis of collagen, perivascular infiltration with round cells, and giant cell formation are the fundamental reactions of human tissues, but only in a limited degree have they been reproduced in animals. More often the response has been that of sepsis or of some nonspecific reaction. Similarly, immunologic investigation has been hampered. The organism most commonly blamed has been Streptococcus haemolyticus, and its rôle in the etiology is at present a hotly disputed point. It has been thought by some to be the cause of the disease, by others the sensitizer to the infection, and by others to play no part but that of the innocent bystander. From the studies to date, there appear certain definite points:

1. Rheumatic fever in the United States is predominant in the northeastern part and is a disease of temperate climates. The more carefully it is searched for, however, in regions thought to be relatively free from it, the more frequently it appears to be found, though disguised in less classic form.

2. It has a seasonal variability, being more active in the late winter and early spring in this country.

3. It is a disease of the lower middle class and is aggravated by crowding and urban conditions. Paul has found it eight times as frequently in children attending public schools in poverty-stricken areas in New Haven as in children attending private schools, which confirms figures from our clinic.

4. It tends to be more common in certain families.

5. It has an optimal age period for first attacks at from five to twelve years.

6. Whatever the underlying virus may be, the disease is capable of reactivation by many nonspecific agents or events, the chief of which is respiratory infection. Accidents, injuries, emotional episodes, surgical operations, nonspecific protein shock and high temperature therapy have been shown by Bland and Jones at the House of the Good Samaritan in Boston to be able to precipitate a recurrence of signs of active infection in rheumatic children.

From this mixture of etiologic factors one can extract a composite ideal recommendation for the pre-

vention of the disease. It would seem as if children, especially of well-to-do parents, living in the rural tropics and free from respiratory disease with hemolytic streptococci, would be in the most desirable situation so far as avoidance of rheumatic infection is concerned; they should not migrate to temperate climates in the colder months of the year, since they can develop very severe rheumatism, such as happened to Puerto Ricans studied by Coburn in New York.

It is clear that such a combination of factors as appears in this ideal composite cannot be effected even though it would reduce the prevalence of rheumatic fever; nor, indeed, would it be desirable for many other reasons. From the standpoint of preventive medicine there are two aims for which to strive. The first concerns the actual destruction of the disease by removing the soil in which it flourishes; this is based on the hope that a gradual improvement in the average standard of living may abolish the urban crowding, malnutrition, faulty housing and possibility for direct transmission of disease, which seem the abetters of the rheumatic infection. This is perhaps utopian and remains for the distant future to evolve. As regards the individual case, efforts can be made for the betterment of living conditions which our first aim implies as well as for the recommendations about residence in warm and equable climates.

The second avenue of preventive approach is less concerned with racial betterment but is more immediately applicable. It has to do with the attempt to prevent reactivation of rheumatic fever already acquired by the child but lying quiescent and perhaps associated with only minor cardiac damage. Here it is a matter chiefly of the prevention of respiratory infection. Matters of diet or rest, isolation from family or school contacts with colds and sore throats, and instruction of parents, nurses and teachers are all necessary, as is the appreciation by all who deal with such children that rheumatic infection is of long duration and that the appearance of any one of the many signs of its activity is a requirement for bed care for the child. This second aim, then, is the prevention of involvement of the heart, since this is the crippling damage, although it is now known that the rheumatic disease also attacks all other organs of the body through its effects on mesodermal structures, as shown by the perivascular response.

So far, the use of vaccines, preventive or curative serums, change in immune reactions by nonspecific measures, high or selective vitamin feeding, and attempts to reproduce tropical conditions in institutions in temperate zones have failed to prevent recrudescence of the disease. One variable not controlled, to our knowledge, has been the humidity of the air in hospitals for rheumatic children where temperature regulation and ultraviolet radiation have been used to reproduce tropical weather. Keeping a group of children in such an atmosphere with adequate humidity throughout the winter might be helpful and would more nearly approximate the conditions that we have sought in sending children to Florida from the House of the Good Samaritan.

SYPHILITIC HEART DISEASE

The incidence of syphilitic heart disease is not high in any large group of the population of the United States except the Negro, and even in this race hypertension is more common. In New England the incidence is about 5 per cent and in Texas 19.5 per cent in a combined group of white persons and Negroes, with a percentage of 32 in Negroes alone.[2] The etiology of syphilitic aortitis became firmly established almost thirty years ago, and with the introduction of modern treatment for the primary infection the possibility of eradication of its effects on the cardiovascular system became apparent. Of the four chief etiologic types of organic heart disease, this is the one seemingly destined the soonest to disappear through the early diagnosis and treatment of its underlying cause. Already there is some evidence of a decrease in aortic syphilis in New England; in the ten years from 1900 to 1909, 51,875 patients were admitted to the Massachusetts General Hospital and the diagnosis of aneurysm of the aorta was made in 113 cases—an incidence of practically 0.2 per cent. In a similar ten year period that ended in 1934, 75,184 patients were admitted and only sixty-one aneurysms of the aorta were found, or an incidence of only 0.08 per cent, and this in spite of the improved roentgenologic facilities for diagnosis in the latter period.

HYPERTENSIVE HEART DISEASE

High blood pressure is a tremendously important cause of strain on the heart and leads to cardiac failure by producing fatigue, dilatation, and hypertrophy of the left ventricle. In New England it is a primary or secondary factor in 30 per cent of all organic heart disease. It can be separated from coincident arteriosclerosis only with difficulty in certain cases, but the present evidence is in favor of the view that when they are combined the arterial hypertension precedes the degeneration of the vessels. The cause of high blood pressure is not known, but innumerable theories have led to the addition to, or subtraction from, the environment of patients with hypertension of such a collection of foods, drugs, joys and sorrows, virtues and vices as would comprise most of the human experience. In many instances the patient has been bettered, in many others he has been made worse, and in both instances his blood pressure has usually remained the same.

It is popular at the moment to blame our modes of living for the increase in hypertension in the belief that emotional hyperactivity results in arteriolar spasm, decrease in peripheral vascular bed, increase in systemic pressure, degenerative changes in arterioles and arteries and an overwhelming burden on the heart. Apparently good evidence has been found which shows that the prevalence of hypertension in different races is in direct ratio to the strains of civilized life rather than dependent on any of the dietary factors that have been such popular culprits. For example, the African Negro is said to be less hypertensive in a state of nature than when exposed to white civilization. It still seems difficult to explain the prevalence of high blood pressure in the American Negro on the basis of emotional tension when a relative freedom from worry has been adduced by some to explain a rather strikingly low incidence of angina pectoris in this group.

There are probably many causes for hypertension—some remediable, did we but know them, and some beyond our power to change in the event that we, as

2. Stone, C. T., and Vanzant, Frances R.: Heart Disease as Seen in a Southern Clinic, J. A. M. A. **89**:1473 (Oct. 29) 1927.

a nation, choose to continue to live at a constantly accelerating speed.

It has been said that the younger members of hypertensive families should be spared the tensions of life, which are thought to lead later to high blood pressure. How that can be done is not clear. All existence is strongly competitive at present and for men to become the objects of public or private charity in no way leads to emotional relaxation, although it may appear to permit physical rest. A compromise, with the avoidance of some strains, is, however, always possible and may make the difference between health and illness.

The newer studies on endocrine factors, carotid sinus reflexes, and pressor substances may lead to preventive measures in the future; but if the mechanism of hypertension is to remain a function of the emotions there seems little immediate hope of its abolition.

ARTERIOSCLEROTIC HEART DISEASE, MUCH BETTER DESIGNATED CORONARY HEART DISEASE

Here a word or two about definitions is of fundamental importance at the start. The unsatisfactory term "arteriosclerotic heart disease" is at last being rapidly supplanted by the expression "coronary heart disease," which might be more accurately given under the cumbersome designation "atherosclerotic coronary heart disease." Arteriosclerosis generally distributed throughout the body or localized even in high degree in organs other than the heart does not cause heart disease, except as severe renal involvement may influence the heart secondarily through much hypertension or the toxic effect of uremia. Coronary arterial disease of any importance is in the very great majority of cases due to an atherosclerotic process and only rarely to infection; narrowing or occlusion of the mouths of the coronary arteries by syphilitic aortitis should not be considered coronary arterial disease any more than the blocking of the vessels by emboli as in bacterial endocarditis; the hypothetical but plausible coronary spasm, if it occurs, may be the result of irritation of the vessel walls by some disease process as well as of nervous vascular irritability. The term atherosclerosis is better than that of arteriosclerosis so far as the coronary arteries are concerned, as many of the most serious lesions, especially in youth, are the result of softening, or atheroma, with ensuing reaction, which may occlude the vessels, rather than of sclerotic changes with calcification, which may be only the terminal stage in the aged. Finally, the term angina pectoris is not to be used interchangeably with that of coronary atherosclerosis; it is, to be sure, a symptom which in the great majority of cases does spell much coronary vascular disease, but it is in large part dependent on nervous irritability and sometimes not due to any obvious disease of the coronary arteries themselves, as in syphilitic aortitis when the coronary mouths are narrowed and in extensive aortic valve disease when the blood flow is not normal and an element of vascular spasm is probably superadded. Thus angina pectoris may exist without coronary atherosclerosis; and, much more frequently, coronary atherosclerosis, even of very high degree, may occur without angina pectoris.

Coronary disease occurs as an important factor in the production of heart disease in about 25 per cent of the heart cases in this country.

Coronary disease, as defined, shows itself clinically most commonly by the occurrence of either angina pectoris or coronary thrombosis or both, occasionally by certain electrocardiographic changes, namely, auriculoventricular or intraventricular block and inversion of the T waves with or without abnormal position of the ST intervals not otherwise explained, and infrequently by congestive failure of the heart without previous warning.

There is one other type of so-called atherosclerotic heart disease that is occasionally encountered and which has been discussed off and on in the past, but not with a very clear estimate of its importance. This is atherosclerosis involving the endocardium and valves, particularly the aortic valve. There is no doubt about the existence of this condition. It probably has much the same basis as atherosclerosis of the arteries, but it practically never assumes any clinical importance. The amount of change is slight. The usual manifestations are a little atheroma or sclerosis on the valve cusps, and especially fibrosis and calcification at the base of the aortic cusps on the aortic side of the valve. Infrequently the aortic valve ring, and very rarely the mitral valve ring, may become calcified and the process may extend a little way up on to the cusps themselves, producing a slight amount of stenosis. This condition involving the aortic valve has been called Mönckeberg's sclerosis. The important degrees of valvular stenosis are, however, always on an infectious background even though calcification may be superimposed; that is, significant calcareous valve disease is never, so far as we know, the result of a simple atherosclerosis.

The cause or causes of coronary atherosclerosis are not known. They have been the subject of extensive discussion for well over a hundred years now and the International Association of Geographic Pathologists, which met last summer in Utrecht to study arteriosclerosis, was unable to throw any new light of vital importance on the time worn subject. Infection, wear and tear, malnutrition due to lesions of the vasa vasorum, hereditary weakness, and metabolic disorders have been the most popular culprits. At present it is rather the vogue to believe that serious atherosclerotic changes are produced in arteries or portions of arteries that are under the greatest mechanical strain (wear and tear) in individuals who have inherited arteries that are fragile in this particular and who for some unknown reason have been depositing an excessive amount of fat in their artery walls for years, sometimes since early youth. Diabetes and obesity, especially the former, favor the earlier appearance of coronary atherosclerosis.

Coronary thrombosis is still another problem. It is, to be sure, implanted as a rule on coronary artery walls that are badly damaged and in lumens that are much narrowed, but not always. In some cases, at least, a thrombotic tendency appears to exist.

From what we have said it is evident that we cannot do much as yet to prevent coronary atherosclerosis. The advice, which, from our own studies of healthy centenarians and of young persons with coronary disease and from the study of others, we might in our present ignorance bestow, would be "to select good ancestral coronary arteries, to avoid diabetes and excessive obesity or, if they are present, to treat them, and to establish healthy habits of life—in work, leisure, exercise, rest, diet, digestion, and the avoidance of certain poisons like lead, which increase the tendency to arteriosclerosis." Country life and hard physical work,

105
935

the avoidance of excessive worries and nervous strains, and the temperate use of tobacco appear to be of some importance in promoting longevity. Finally, why should the male sex be so preponderantly affected? Every one of twenty-five patients of ours with clinical evidence of serious coronary atherosclerosis 40 years of age or under was male and nearly 90 per cent of those under the age of 50 were male; here apparently lies a vital clue.

270 Commonwealth Avenue.

AN ANALYSIS OF THE APPARENT INCREASE IN THE HEART DISEASES

ALFRED E. COHN, M.D.
NEW YORK

It seems scarcely necessary to repeat the commonplace that the death rate from cardiac and circulatory diseases is mounting while that from the infectious diseases is falling (chart 1). But it is necessary to insist on this fact in order to raise these questions: First, how do the individuals who died formerly of infectious diseases come to an end? and, second, is it really true that the increase in deaths from circulatory diseases takes place because of the fall in deaths from infectious ones? It is necessary to show that the fall in the former is actually enough to account for the rise in the latter. A simple calculation shows that this is not true. The decades that are especially involved are those after age 40, for it is in these that the rises in circulatory diseases have taken place. The increases in circulatory diseases are indeed greater than the decreases in the infectious ones. There is, in short, a net increase in the circulatory diseases after age 60. How this takes place can be demonstrated in a set of curves. It should be understood that the figures given describe the condition in the U. S. registration area of 1900. They may be representative of the country as a whole, but, seeing how closely diseases of all sorts are dependent on the environment, the climate in the West and South may actually require a different description of the course of cardiac diseases for these states.

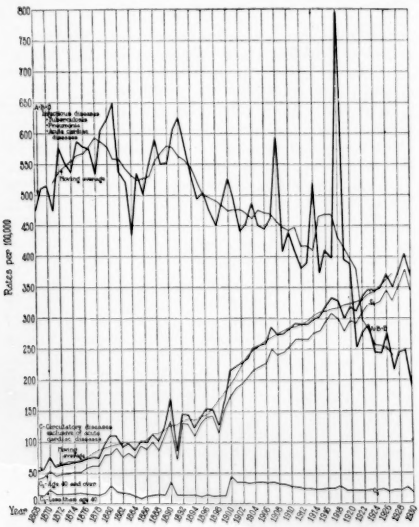

Chart 1.—Mortality rates per hundred thousand of various diseases in first ten registration states and the District of Columbia, 1868-1930. The diseases are grouped as follows: A (infectious diseases): Typhoid, measles, scarlet fever, whooping cough, diphtheria, influenza, mumps, dysentery, acute poliomyelitis, meningococcic meningitis, malaria and cholera nostras. B. Tuberculosis, pneumonia and bronchopneumonia. C (circulatory diseases exclusive of acute cardiac diseases): Apoplexy, angina pectoris, other diseases of the heart (including endocarditis), diseases of the arteries, and other diseases of the circulatory system. D (acute cardiac diseases): Pericarditis, acute endocarditis and myocarditis. The states included are Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island, Vermont and the District of Columbia.

Next, changes have taken place in the diagnoses commonly employed in reporting deaths from circulatory diseases (chart 2). It is clear that beginning with age 40 there has been a rise in the death rate from chronic cardiac diseases, decade by decade, from 1900 to 1930. The same statement can be made about diseases of the arteries until the year 1920. Since then, if diseases from the coronary arteries are excluded, the rate has either fallen or remained constant. In chronic nephritis it is only beginning at age 70 that the rate rose to a high point in 1920, and it has fallen since in every decade. In the diagnosis cerebral hemorrhage and softening there has been a fall in each decade after 1920 and, as against 1900, no rise until age 70. Senility, a diagnosis commonly employed formerly, is made with conspicuously less frequency now. If these five sets of curves are viewed as a whole, it appears that it is only in chronic cardiac diseases that a more or less consistent rise has taken place since 1900 after age 40. In short, these banks of curves show fairly conspicuous tendencies. If all of them are added together, as is done in the last column, the curves appear flatter and exhibit rises of a more or less important nature only after age 60. From this chart alone the conclusion may be drawn that, although there has been a rise in all these diseases taken together since 1900, the rise is not conspicuous.

It has already been stated that there have been savings in every decade in the infectious diseases. It has also been stated that there are increases in circulatory ones in every decade after age 50. Finally, it should be repeated that the increases are somewhat more than the savings, especially between ages 70 and 89. This relation can be shown by studying the facts arranged in a somewhat different way. In each decade it is clear that the rate of all the infectious diseases has fallen (chart 3, curve 2). It is also clear that, beginning with age 50, the curves in each decade showing the combined death rates from circulatory diseases have risen (chart 3, curve 1). If curves 1 and 2 are added, it appears that only after age 80 has the fall in curve 2 (infectious diseases) been insufficient to bring about a fall in the combined curves 1 and 2. Here, in short, the savings from infectious diseases just about balance the increases in the circulatory ones so that since 1920 the curves in these decades are flat. One must reckon then with the fact that if, since 1900, there has on the whole been a rise in the death rate from circulatory

From the Hospital of the Rockefeller Institute for Medical Research. Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

diseases, this rise is slight and is due to the fall in infectious diseases. It is a matter of great importance to notice that the fall in infectious diseases has taken place in the very decades in which rises from circulatory diseases occur. The notion which has been prevalent that the increases in circulatory diseases, small as they are relatively, are due to the decrease in the rate of infectious diseases in the early ages of life is therefore incorrect. The savings from infectious diseases which occasion the rises in the circulatory ones take place in the same decade. The reason for the small discrepancy according to which there is a rise in the circulatory diseases at all is not explained in this analysis. Considering the nature of vital statistics, it is not surprising that an exact balance has not been found. The opportunity for error is, of course, very great. It should be pointed out that the result which has been attained in this study should have been anticipated, for, although the number of deaths in circulatory diseases, and indeed from other diseases, may be expected to have risen as a result of doubling of the population in every decade after age 40, between 1900 and 1930 there is no reason why there should have been a change in rate. This should have remained the same except for special alterations in balance, such as are exhibited in the interplay between circulatory and infectious diseases. The following inferences may be drawn from this study:

1. There has been a rise, but a slight one only, in the death rate from circulatory diseases.

2. Changes in the diagnoses which have been employed account in part for the interpretation which has been placed on the course of events.

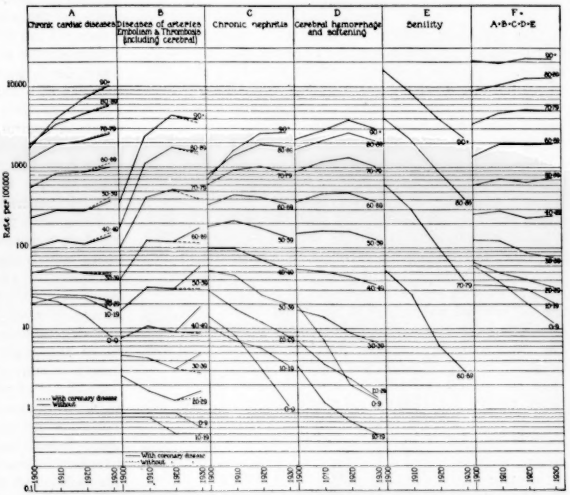

Chart 2.—Death rates per hundred thousand of population for United States registration area of 1900 for certain diseases.

3. The slight rise in the total death rate from circulatory diseases is due apparently to savings from deaths resulting from infectious diseases in the very decades in which the slight rise in the circulatory diseases has occurred.[1]

Sixty-Sixth Street and York Avenue.

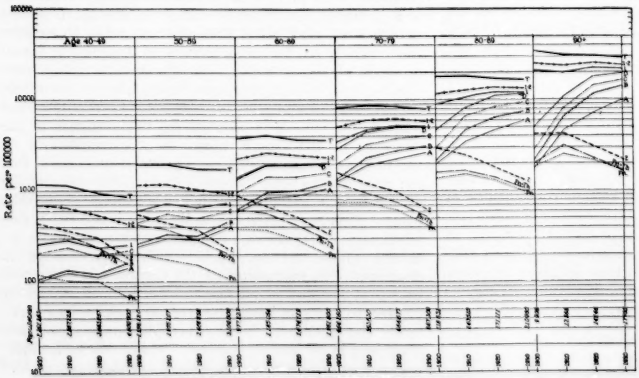

Chart 3.—Death rates per hundred thousand of population for United States registration area of 1900 for certain diseases and combinations of these diseases by age groups in 1900, 1910, 1920 and 1930. Curve A describes the course of the death rates in chronic cardiac diseases. Curve B adds to curve A the death rates in diseases of the arteries. Curve C adds to curve B the death rates in chronic nephritis. Curve 1 in the fifth and sixth decades adds to curve C the death rates in cerebral hemorrhage and softening and represents therefore the death rates of this entire circulatory group. Curve D beginning in the seventh decade adds to curve C the death rates in cerebral hemorrhage and softening. Curve 1 beginning with the seventh decade adds to curve D the death rates in senility and represents therefore the death rates of this entire circulatory group. Curve Pn gives the death rates from the pneumonias. Curve Pn+Tb adds to curve Pn the death rates from tuberculosis. Curve 2 adds to curve Pn+Tb the death rates of all the other infectious diseases. Curve 1-2 is the sum of curve 1 and curve 2. Curve T adds to curve 1-2 the death rates of all the other causes of death and describes therefore the total death rate.

1. A more detailed account of these studies has been given by Cohn, A. E., and Lingg, Claire: Am. Heart J. **9**: 283 (Feb.) 1934.

Bathing During Menstruation.—Should bathing be omitted during menstruation? On this point there has been a considerable change of opinion and practice in recent years. Our grandmothers were certainly as a rule taught that the daily bath must be abjured during menstruation, while now many "modern" girls take a daily shower, or perhaps go in swimming, without regard to menstruation. It would be foolish to lay down hard and fast rules in this respect. It can be said, however, that for the girl who has accustomed herself to a cold bath or a cold shower every morning no harmful effects are to be expected if the cold showers are kept up during menstruation. . . . If a shower is available, there would seem to be no reason why it should not be enjoyed.—Novak, Emil: The Woman Asks the Doctor, Baltimore, Williams and Wilkins Company, 1935.

THE HEART IN HYPERTENSION

GEORGE FAHR, M.D.
MINNEAPOLIS

The appalling death rate associated with essential hypertension [1] is just beginning to dawn on the medical public. Bell and Clawson [2] found that 12.6 per cent of all patients over 40 years of age and 14.8 per cent of all patients over 50 years of age coming to autopsy had a history of high blood pressure or showed anatomic evidences of having had hypertension. These figures were partly based on increased heart weight in cases showing no valve defect, adherent pericardium, chronic nephritis or hyperthyroidism. There is some slight error in the assumption that idiopathic left ventricular hypertrophy is always due to increased blood pressure, but this slight error is well balanced by the fact that in some cases of severe hypertension known to have existed for years previous to autopsy the hearts are of normal weight. On the other hand, Bell and Clawson have considered only female hearts over 450 Gm. and male hearts over 500 Gm. as indicating the presence of hypertension during life. Using the coefficient of variation of 17.7 per cent calculated for normal heart weight by Greenwood [3] and assuming that the normal mean female heart weight is 300 Gm. and the male is 350 Gm., I have calculated that there is not one chance in twenty that a female heart weighing 400 Gm. or a male heart weighing 450 Gm. is normal. It can also be calculated that, if Bell and Clawson had used the foregoing heart weights as the upper limits of normal, they would have found that their material showed about 20 per cent of hypertension for patients for the ages above 50 years.

Making use of the official mortality statistics for the registration area of the United States for 1924, I [4] have calculated that there were approximately 140,000 deaths, or 23 per cent of all deaths, during this year in persons aged 50 years or older in consequence of essential hypertension. This is nearly twice as many as the number of cancer deaths for the same age group. Although there is some error connected with all these figures, they do show that the incidence of hypertension in the general population over 50 years of age is very high indeed and that the death rate in consequence of high blood pressure greatly overshadows the death rate due to any other factor. Since at least 55 per cent of all patients with high blood pressure die of heart failure,[5] it can be readily seen that knowledge of this most frequent form of heart disease is of paramount importance to the general practitioner.

PATHOLOGIC ANATOMY

In any study of the heart in essential hypertension it is well to begin with the pathologic anatomy of this organ. With a few exceptions all hearts in which hypertension has been present for some time show a considerable increase in weight. The majority will weigh over 400 Gm. in females and over 450 Gm. in males. This increase in weight is due largely to hypertrophy of the left ventricle. There is also some hypertrophy of the right ventricle, because as a general rule when the left ventricle fails the right ventricle hypertrophies in some degree. There is always some dilatation of the left ventricle and frequently of the right ventricle during life, but the left ventricular dilatation may not show up well at autopsy because the left ventricle contracts vigorously at death. In the orthodiagram and the x-ray silhouette made at six feet distance this left ventricular dilatation is nearly always shown.

Some scar tissue is frequently found, especially in the left ventricle. This scar tissue replaces muscle fibers which had previously undergone degeneration. Occasionally one sees small areas of necrosis with leukocytic infiltration. Bacteria have never been demonstrated in such lesions, and Clawson [6] has shown that this degeneration of the heart muscle and the subsequent scar tissue replacement are practically always found when coronary arteriosclerosis is present. Aschoff [7] was probably the first to insist that there is no anatomic evidence for chronic myocarditis or true inflammatory processes in the heart muscle in cases of heart failure associated with nephritis and coronary arteriosclerosis. He related the replacement fibrosis to the narrowing of the coronary vessels. Inflammatory infiltration of the heart muscle he found only when rheumatic fever or diphtheria had been present.

Coronary arteriosclerosis of some degree is found in 90 per cent of all hearts of patients dying with hypertension. This is a most important finding because it is a powerful contributing factor in the heart failure that follows high blood pressure and helps to explain the scarring of the myocardium so frequently found in cases of hypertension. As the muscle cell hypertrophies its volume increases faster than its surface, because the surface is proportional to the diameter whereas the volume is proportional to the square of the diameter of the muscle fiber. If the metabolism of the fiber is a function of its volume it is evident that the need for oxygen increases faster than the surface of the muscle through which gas exchange must take place. This may place the heart muscle fiber at a disadvantage so far as supplying its oxygen need is concerned unless an increased capillary circulation is developed. A narrowing of the coronary arteries will lead to a reduced blood flow and a reduced supply of oxygen to parts in need of a greater supply, and eventually the fiber may become atrophic or necrotic and disappear from lack of oxygen. Scar tissue is an indication that a portion of the muscle has disappeared and has been replaced by white fibrous tissue.

In my opinion there is another relationship between hypertension and coronary arteriosclerosis that needs to be emphasized. If the number of hearts with some degree of coronary arteriosclerosis is calculated from Bell and Clawson's 420 cases of hypertension, on the assumption that 90 per cent of all cases show some degree of coronary disease, one finds that there were 378 cases of coronary disease directly associated with

From the University of Minnesota Medical School and the Minneapolis General Hospital.

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1. By essential hypertension is meant high blood pressure not due to glomerulonephritis, congenital cystic kidneys, coarctation of the aorta or hyperthyroidism. High blood pressure includes all systolic pressures over 150 and all diastolic pressures over 90 mm. of mercury. The hypertension is the primary pathologic factor. Heart failure, cerebral accident and uremia are consequences.

2. Bell, E. T., and Clawson, B. J.: Primary Hypertension, Arch. Path. **5**: 939 (June) 1928.

3. Greenwood, P.: Weight of Human Viscera, Biometrika **3**: 67, 1904.

4. Fahr, George: Hypertension Heart, Am. J. Med. Sc. **175**: 453 (April) 1928.

5. Bell and Clawson,[2] Fahr.[4]

6. Clawson, B. J.: The Myocardium in Noninfectious Myocardial Failure, Am. J. M. Sc. **168**: 648 (Nov.) 1924.

7. Aschoff, Ludwig: Die heutige Lehre von den pathologisch-anatomischen Grundlagen der Herzschwäche, Jena, 1906.

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193

hypertension. In addition, Bell and Clawson's autopsy material showed sixty-nine cases of coronary disease that gave no history of hypertension and the hearts did not weigh enough to be included in the hypertension group. But 55.5 per cent of these coronary arteriosclerosis cases showed renal arteriosclerosis. It is generally conceded that renal arteriosclerosis is practically never found excepting when hypertension has previously been present. From this I conclude that hypertension was present in thirty-eight of these cases of coronary arteriosclerosis. Therefore in Bell and Clawson's autopsy material there was a total of 447 (378 + 69) cases of coronary disease, in 416 (378 + 38) of which hypertension was present. In other words, 90 per cent of Bell and Clawson's coronary arteriosclerosis material showed evidence of association with hypertension.

HYPERTENSION AND CORONARY ARTERIOSCLEROSIS

I have not made a careful and accurate statistical study of my clinical material for information as to the percentage of hypertension present in cases of coronary arteriosclerosis, but a cursory examination of the cards in my index at the Heart Clinic at the University Hospital shows that 83 per cent of all patients had blood pressures over 150 systolic and 90 diastolic. Only 50 per cent of the cases of coronary arteriosclerosis were filed directly as coronary arteriosclerosis. The other 50 per cent were filed directly as hypertension heart and cross filed as coronary arteriosclerosis. The evidence of high blood pressure in the cases filed directly as coronary arteriosclerosis was 67 per cent. There is often considerable doubt as to whether a case should be filed as hypertension heart or as coronary disease, and the final decision is somewhat arbitrary. The same may also be said of Bell and Clawson's separation of their cases into hypertension cases and coronary cases. The remarkable thing is that their anatomic investigation results in the same conclusions as my cursory examination of the clinical records; namely, that coronary arteriosclerosis is associated with hypertension in a very large proportion of cases. In his Textbook of Pathology, Bell states that 75 per cent of all coronary cases are associated with high blood pressure. This agrees well with my analysis giving 80 per cent. I think it can conservatively be estimated that 75 per cent of all patients with coronary disease at some time have had high blood pressure.

I have been at some pains to emphasize this close relationship of hypertension and coronary arteriosclerosis because I believe it to be of great importance in prognosis and in an understanding of the progress of the disease. In patients with hypertension who die of uremia, it is the arteriosclerosis of the small renal vessels that decides the outcome; the state of the cerebral vessels decides the outcome in patients with hypertension who die of encephalomalacia or apoplexy; the fate of the heart in hypertension is also to a very considerable degree decided by the state of the coronary vessels. Moreover, it is not infrequently found that the blood pressure falls appreciably and sometimes nearly to normal when an advanced degree of coronary arteriosclerosis develops in a case of hypertension. When the patient is seen by the physician the blood pressure may give no evidence of the high values previously present because of the coronary disease and sometimes because of the heart failure. Because of their frequent association, hypertension and coronary arteriosclerosis should be considered together.

BLOOD PRESSURE

A word must be said about the variability of the blood pressure in hypertension, because it is the high blood pressure that increases the work of the left ventricle and leads to the hypertrophy, dilatation and finally failure of this heart chamber. It is rare for the blood pressure to have a steady value in hypertension. If one takes the blood pressure from day to day one sees that both the systolic and the diastolic values vary more or less. If the patient is put to bed, the blood pressure usually falls some within twenty-four to forty-eight hours. In not a few patients with very high blood pressure when up and about, the blood pressure falls to moderate pressures after a few days rest in bed. In most persons with hypertension the blood pressure falls somewhat when they are asleep. In not a few it falls very considerably and approaches the normal. The reassurance of a patient with high blood pressure by a good physician will not infrequently lead to some lowering of the average blood pressure. I have already pointed out that the development of coronary disease not infrequently leads to some lowering of the blood pressure. Heart failure may also lead to lowering of blood pressure but not invariably. There are, however, quite a few exceptions to the general rule that blood pressure in hyperpiesia varies from day to day and under various external sources of stimulation and under various forms of sedative treatment. Many patients retain their high blood pressures despite severe degrees of failure and severe degrees of coronary disease and I have seen pressures of 240/120 up to within one hour of death from severe congestive heart failure.

In calculating the work of the left ventricle in hyperpiesia it is therefore well to keep in mind that the blood pressure falls somewhat during sleep and often during rest in bed. Also it is well to keep in mind that the blood pressure often drops not inconsiderably for periods of varying length, thus lessening the fatigue of the left ventricle temporarily. The highest blood pressures do not measure the fatigue effect on the left ventricle any more than the lowest pressures do. It is the integration of the varying blood pressures over a period of time that measures the effect of hypertension on the left ventricle.

It is often said that the diastolic blood pressure is the more important measure in hypertension. So far as the work of the left ventricle is concerned, this is not true. The work of the left ventricle is measured by the product of the minute volume of blood [8] and the "mathematical mean" pressure in the root of the aorta during systole. When systole sets in, blood is ejected from the left ventricle into the aorta. At the beginning of the ejection the blood pressure in the aorta is the diastolic blood pressure, but within a few hundredths of a second the blood pressure in the root of the aorta rises to the systolic value, at which point it stays as long as blood is ejected from the left ventricle. An integration of the blood pressure curve as taken with optical manometers shows that the mathematical mean pressure during the ejection time of the left ventricle is very much closer to the systolic blood pressure than to the diastolic blood pressure; in fact, the blood pressure against which most of the blood is injected into the aorta is very much nearer to the systolic blood pressure than it is to the "arithmetical mean" pressure.

8. The minute volume is the volume of blood ejected from the ventricle during a minute. In other words, it is the volume flow.

Therefore the work of the left ventricle in both normal persons and such as have hypertension is approximately proportional to the systolic blood pressures, provided the output per minute is the same.

As the blood pressure rises, so does the work of the left ventricle; however, at first there are no symptoms of fatigue of the left ventricular muscle. The left ventricle must dilate a little according to the "law of the heart" in order to take care of the increased load of

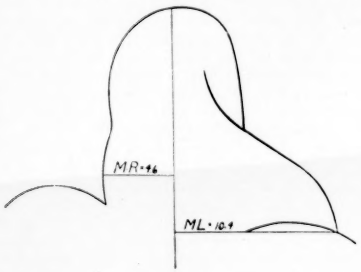

Fig. 1.—Orthodiagram of heart in case 3. Typical left ventricular dilatation.

work. This physiologic dilatation is only a few millimeters in transverse diameter and is not noticeable on roentgen examination. This physiologic dilatation of the left ventricle takes place at once and is followed later on by a hypertrophy of the left ventricular muscle. Slowly but surely the left ventricle fatigues, and after it has overcome high blood pressure for some years another period of dilatation sets in, which goes on continuously throughout the life of the patient. This dilatation marks the beginning of heart failure. Up to this point there has been compensation for the increased work of the left ventricle through a very slight physiologic dilatation and through hypertrophy. These compensatory mechanisms having failed, increased dilatation must develop.

Even when very high blood pressures prevail, this fatigue dilatation takes place very slowly—usually not as much as 5 mm. in transverse diameter in a year, provided there is very little coronary artery narrowing present at the same time. If there is ischemia of the left ventricle consequent to coronary narrowing, this dilatation of the left ventricle takes place more rapidly. As a rule symptoms of congestive heart failure do not develop until there is a very definite left ventricular dilatation present. This left ventricular dilatation produces the typical boot shaped heart (fig. 1). Not infrequently the right side of the heart dilates because failure of the left side ultimately increases the work of the right. Moreover, the coronary system to the right ventricle may be narrowing, bringing with it ischemia and failure of the right side. When the right side dilates as well as the left, the x-ray picture corresponds to figure 2. As the heart dilates more and more there are increased signs of congestive heart failure.

SYMPTOMS

Perhaps the first symptom noticed by many patients with a failing heart in consequence of hypertension is an increased tiring at work, a decreased resistance to fatigue. Dyspnea on exertion is also an early symptom. The dyspnea is consequent to failure of the left ventricle and the accompanying increased venous and capillary pressures in the lungs. Later, râles may appear at the lung bases. As the heart failure increases, edema of the extremities, symptoms of enlarged passive congested liver and cyanosis are added to the symptomatology. Occasionally symptoms of heart failure develop after a severe infection of the upper respiratory tract or other infection. Occasionally severe exertion precipitates heart failure. In some cases the onset of auricular fibrillation brings forth clinical evidence of heart failure. But, even without these precipitating causes, failure of the left side of the heart will eventually develop in all cases of severe hypertension, provided death from some other cause does not intervene before the heart failure develops.

In some cases, attacks of angina pectoris or coronary thrombosis appear. These attacks reveal the presence of coronary disease. Attacks of nocturnal dyspnea are not infrequent in cases of hypertension associated with moderately severe or severe coronary arteriosclerosis. The symptoms of coronary disease may wholly dominate the picture.

Auricular fibrillation is the most common form of arrhythmia found associated with hypertension. When it appears the heart fails rapidly and unless the heart receives competent treatment congestive failure progresses dangerously. Pulsus alternans may be found associated with hypertension some years before congestive failure is present; on the other hand, congestive failure symptoms may come on very shortly after the discovery of pulsus alternans. The electrocardiogram may show only left preponderance or be entirely normal if there is no coronary disease present. The presence of coronary disease is frequently shown on the electrocardiogram by negative Ts, Pardee Q_{III}, depressed ST interval or heart block. On the whole, the symptoms

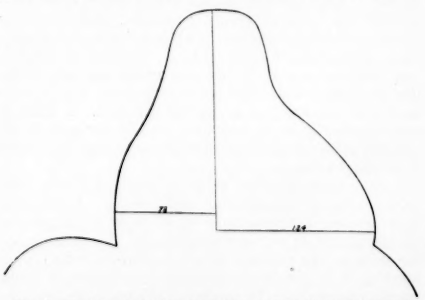

Fig. 2.—Tracing of six foot heart plate in case of severe congestive heart failure with blood pressure of 220/110 and electrocardiogram showing evidence of coronary arteriosclerosis. Left and right ventricular dilatation, the left predominating.

and signs of congestive heart failure in hypertension are the same as in other forms of heart disease, and when coronary disease is associated with the hypertension the symptoms and signs do not differ from the symptoms and signs in coronary disease not associated with hypertension.

LIFE EXPECTANCY

In my opinion the life expectancy in hypertension is much longer than most physicians are accustomed to believe. I have many patients with hypertension now

under observation who have survived from twelve to seventeen years of very high blood pressure. I am inclined to believe that the average life expectancy is from fourteen to fifteen years. Most persons with hypertension do not come to a physician until symptoms develop, and as a rule such symptoms are not manifest until hypertension has been present for some years. I believe that the short life expectancy found by Blackford in his series is due to the fact that many of his patients had been symptom free with hypertension for years and came to his clinic only after symptoms had developed. Rarely does hypertension produce symptoms of heart failure, renal insufficiency or cerebral disease until it has been present for a number of years. Persons with hypertension are usually vigorous and well for years until the three well known sequelae develop in the heart, brain or kidney. The left ventricle stands up wonderfully under the increased load of work day in and day out. The presence of coronary disease cuts down the time before heart failure intervenes, but even with coronary disease present the left ventricle is equal to its increased task for many years. The following three cases will illustrate this. I do not believe that these cases are very exceptional. I have other cases of high blood pressure of twelve to seventeen years' standing that might have been used for illustration, but these three cases have very full records over a long period of time and in addition the first two have autopsy examinations to supplement the histories.

REPORT OF CASES

Patient 1 was found to have a blood pressure of 220 systolic in April 1912. At that time he was very nervous and showed a trace of sugar in the urine. When he was sent to a celebrated consultant because of the glycosuria, it was discovered that he did not have diabetes but that he had high blood pressure. Since that time he has been examined frequently. His blood pressure has been found as low as 170 systolic on two occasions; once after a long vacation and then in November 1933, a month before he died and at a time when he was resting in bed. His blood pressure was usually found to be from 210 to 230 systolic and from 115 to 130 diastolic. I have found the systolic as low as 190 on a few occasions but a day or two before or after this it would be above 200. The patient was known as a very hard worker. He was active as president of a bank and as president of a merchandising business at the time of his death. He never played golf or took part in organized sports. Yet he was accustomed to walk at a good pace every day up until shortly before he died. In 1925, after thirteen years of high blood pressure, he ran a third of a mile to a fire in a block in which he had his business. Although quite dyspneic, he suffered no other ill effects from this exertion. Only two months before he died he played vigorously with his youngest grandson, following which he stated that he was getting too old for such vigorous exercise and that his wind was gone. He was accustomed to drink wine nearly every day and throughout a large part of his life smoked from eight to twelve cigars a day. The last eight years of his life he noted some shortness of breath on walking rapidly and climbing stairs. His heart showed a slow progressive left ventricular dilatation. Two months before his death the transverse diameter was 16 cm. on the six foot heart plate. The transverse diameter for a man of his height and weight is 13.5 cm. Râles were heard at both lung bases and the liver was found just below the right costal margins on several occasions during the seven years preceding his death. Pulsus alternans was found on one occasion about seven years before his death. He fell and fractured his arm in October 1933. He had had one mild stroke a few weeks previously and the fall was undoubtedly in consequence of a cerebral accident. He never recovered after his fall. His sensorium became cloudy and he passed away in November 1933. Autopsy revealed extensive cerebral arteriosclerosis with moderately extensive encephalomalacia. The lungs showed no signs of edema. The liver was not passively congested on gross examination. The heart weighed 370 Gm. and showed very little arteriosclerosis of the coronary arteries. These arteries were wide open on all sections. There was no gross scarring of the muscle. The patient lived twenty-one years with a very high blood pressure. He died from softening of the brain with no demonstrable hypertrophy of the heart muscle and no demonstrable signs of heart failure on gross examination of the organs at the time of his death. He had mild symptoms of heart failure the last seven years of his life but he did not die of heart failure even after twenty-one years of high blood pressure. If he had had moderately severe narrowing of his coronary arteries he would surely have developed severe heart failure and probably would have died many years sooner.

Patient 2 entered the University Hospital in 1917 with a blood pressure of 230/100. She came in because of severe headaches and interstitial nephritis was diagnosed at that time. She was in the University Hospital four times and in the Minneapolis General Hospital four times between 1917 and 1934. During the same period she visited the University Dispensary two or more times every year. Her systolic blood pressure had never been known to be under 200 mm. of mercury in all these years. It had usually been from 220 to 230 during the twelve years that I have taken care of her. The diastolic pressure had not been under 100 in seventeen years, and during the twelve years that I have taken care of her it had always been between 110 and 130. My orthodiagraphic examinations showed a slowly progressing dilatation up to 1928. The transverse diameter of the heart was then 16 cm. The normal transverse diameter for her height and weight is 12.5 cm. At this time she had dyspnea on climbing stairs and some pitting edema. In 1932 the six foot plate taken at the Minneapolis General Hospital showed a transverse diameter of 15.9 cm. Moreover, she had no clinical symptoms of heart failure any more. She was frequently in bed for long periods from 1931 to 1934 because of her mental condition. This bed rest probably accounts for the recession in heart failure symptoms and in transverse cardiac diameter. In 1930 she had a left hemiplegia and in 1931 symptoms of cerebral arteriosclerosis developed. Her memory became poor, she had transient attacks of aphasia, she was very irritable, and she had many crying spells and often fits of rage. She became very emaciated in 1934 a few months before she died. In 1934 she died. The autopsy revealed a heart weighing 310 Gm. According to the autopsy report of Dr. N. H. Lufkin, there seemed to be a definite hypertrophy of the left ventricle, the thickest portion of it being 2 cm. The left coronary artery in its proximal fourth showed occasional concentric thickening due to atherosclerosis without severe closure of the lumen. After its bifurcation the deeper branch was found to be quite free from thickening of any type, while the more superficial branch in the middle fourth and again terminally became rather severely narrowed to half its normal diameter by concentric thickening. The lumen of the circumflex branch was normal in its proximal portion but from its midportion narrowed to one-fourth or one-fifth its normal caliber by concentric thickening. The right coronary artery was concentrically thickened in all portions. Nevertheless it was dilated to nearly twice its normal caliber and even the terminal portions seemed to be of greater than normal capacity. There was moderate patchy fibrosis of the myocardium over the basal portion of the left ventricle, posteriorly in the region supplied by the circumflex branches of the left coronary artery. There was one patch of fibrosis near the tip of the left ventricle close to the septum. This was approximately 1 cm. in diameter. The kidneys were small and had finely granular surfaces. The cut surfaces showed slight though definite narrowing of the cortices. The brain showed severe diffuse atherosclerosis of all the large arteries at the base. Serial sections of the brain revealed irregular and scattered areas of softening throughout the brain. Autopsy revealed no signs of heart failure, only a moderate degree of arteriosclerotic kidney but a severe degree of focal encephalomalacia, which was the cause of the patient's death.

105
35

Patient 3 is now 57 years of age. She was told by her physician in 1919 that she had a very high blood pressure. She had gone to him on account of frequent and severe nosebleeds. In January 1920 she entered the University Hospital, where her blood pressure taken on entrance and throughout a three weeks period of rest in bed was 220/120. On one occasion during the hospital stay the diastolic pressure was measured at 152. She was seen by a private physician for two years, during which time her blood pressure was around 220 systolic and 110 diastolic. I saw her for the first time in 1922 in the University Dispensary. At this time her blood pressure was 240/120. Since then I have seen her at least twice a year, usually much more frequently. Gradually in the course of thirteen years her blood pressure has risen to about 260/140, with some values of 270/150 on the case record. I have had the patient in the University Hospital twice for long periods of observation. Her blood pressure did not fall during sleep. Long rest in bed does not lower it. She has been on an extremely small daily salt intake and on most of the other measures recommended for lowering blood pressure without any effect. In 1928 she had very mild symptoms of beginning heart failure, such as tiring easily and a mild degree of dyspnea on climbing stairs. At this time the transverse diameter of her heart on the orthodiagram was 14 cm. Now in 1935 with a transverse diameter of the heart of 15 cm. (Fig. 1) and after sixteen years of extremely high blood pressure she complains of considerable dyspnea on climbing stairs. Recently I walked with her at a fair pace and found that she developed little or no dyspnea. She has worked very hard at her housework until the last three years. She still does all her own housework, but this she states is not very hard since her last son left for a home of his own. She notices that she fatigues easily. She has occasional attacks of numbness in the fourth and fifth fingers of her left hand. This numbness radiates up the inner aspect of the left arm to the neck. This angina pectoris equivalent corresponds to an electrocardiogram with a deeply inverted T in lead 3. There are no signs of heart failure, such as râles in the lung bases or enlarged tender liver at this time. There is a very slight edema along the shin bones, but this could easily be explained by the varicose veins that are also present. After sixteen years of very high blood pressure there is only a mild degree of heart failure present and no measurable renal insufficiency.

COMMENT

These patients developed symptoms and signs of heart failure only after many years of high blood pressure. Heart failure might have developed sooner if they had been compelled to perform severe physical exertion. One can see that the frequent periods of bed rest enforced in case 2 after 1931 tended to cause the symptoms of heart failure to disappear and tended to cause a slight reduction in the dilatation of the heart. This shows that decreasing the physical exertion in hypertension tends to prolong the period during which failure is developing. On the other hand, the first patient was known throughout his life as an exceptionally active man and the circumstances of life as well as inclination tended to cause the two women to do more than the average amount of work for an American woman. I think they can be considered average cases in most respects.

TERMINOLOGY

Heart disease consequent to high blood pressure is still called chronic myocarditis by many physicians despite the fact that neither careful clinical study nor competent pathologic investigation gives it any support. I object strongly to this name, because it suggests that infection and inflammation are prominent factors in the production of this form of heart failure, an assumption for which there is no good evidence. In former years, cases of hypertensive heart disease were not infrequently diagnosed mitral insufficiency because of the presence of the loud systolic murmur that often accompanies dilatation of the left ventricle. This name is also misleading because it suggests that a valvular insufficiency is the cause of the heart failure, whereas relative mitral insufficiency is a result rather than a cause of the heart failure. Other physicians call this condition cardiorenal disease. This name is objectionable because the word renal is equivocal and suggests glomerulonephritis, renal insufficiency, uremia and a host of other factors that may be but usually are not associated with the kind of heart disease I am discussing in this paper. In Munich, where many of the inhabitants drink enormous quantities of beer, this form of heart disease was often called "bier-herz," and in Tübingen it was not infrequently diagnosed "Tuebinger wein-herz" when found in a vintner who was supposed to consume quantities of wine and carry heavy loads up the hills where the vineyards are located. There is no justification for any of these names at the present time and it would be well to emphasize the relation of this type of heart disease to hyperpiesia by terming it "hypertensive heart disease" or "hypertension heart."

TREATMENT

The therapy of the heart in hypertension does not differ from the therapy of congestive failure of other origin. I have treated this subject quite thoroughly in a previous paper and will refer to that paper for a discussion of the therapy of the heart in hypertension. At present I am inclined to use somewhat larger doses of theophylline ethylenediamine or aminophylline to dilate the coronary arteries than were recommended in that paper, 0.2 Gm. four times a day being the usual amount that I now prescribe.

CONCLUSIONS

1. Fifty-five per cent of the appalling death rate consequent to essential hypertension is due to heart failure. Moreover, heart failure of some degree is nearly always present in cases of essential hypertension in which death occurs in uremia or from apoplexy or cerebral softening.

2. The heart in hypertension shows left ventricular hypertrophy and dilatation with varying grades of replacement scarring in the muscle. There is some coronary arteriosclerosis present in 90 per cent of the cases. The coronary narrowing is responsible for the scars found in the heart muscle.

3. A very high percentage of patients with angina pectoris and coronary arteriosclerosis have high blood pressure complicating the cardiac picture.

4. Hypertension and coronary arteriosclerosis are so intimately and frequently associated that they should be considered together and the term "hypertensive heart disease" or "hypertension heart" should connote coronary involvement.

5. What has been termed "chronic myocarditis" is usually the result of high blood pressure and coronary artery disease and not the result of infection.

6. Heart failure in the clinical sense does not develop in hypertension until many years (from ten to twelve) have passed unless the coronary disease accompanying the high blood pressure becomes very severe or unless some other cardiac complication is present. Many patients with hypertension live fifteen years or more and finally die of one of the other consequences of hypertension, though some degree of heart failure may have been present previously or at the time of death.

THE REHABILITATION AND PLACEMENT IN INDUSTRY

OF THOSE HANDICAPPED WITH CARDIOVASCULAR DISEASE

WILLIAM D. STROUD, M.D.
PHILADELPHIA

Owing to the results of the World War, organization for training the handicapped and placing them in industry of necessity has progressed much more rapidly in Europe than in this country. In most European countries, during the past seventeen years, it has become a national obligation. In Germany they have gone so far as to regulate legally the training and placing of the handicapped, demanding that 2 per cent of all positions in various industries must be filled with individuals at least 50 per cent disabled.[1] I first became interested in this problem while working in England during the years of 1919 and 1920. One day at luncheon, Sir Thomas Lewis remarked that "in the ideal state, no position in industry which might be filled by a person handicapped with cardiovascular disease should be filled with an entirely healthy individual." This, of course, is a strong statement but is certainly worthy of careful consideration.

The majority of the handicapped who may be rehabilitated and placed in industry are those with cardiovascular, arthritic and orthopedic disabilities. Various studies of the numbers of handicapped individuals and vital statistics would suggest that by far the largest group of such handicapped individuals trainable and available for industry is the cardiovascular group.

One of the first and most practical steps in planning for the training and placement of those handicapped with cardiovascular disease was the advocacy of a functional classification of cardiac patients that might be practical from the standpoint of the social service worker, those administering state and city rehabilitation bureaus, and employers in industry. The Heart Committee of the New York Tuberculosis and Health Association has recommended the following functional classification of patients with organic heart disease:[2]

Class I: Patients with organic heart disease, able to carry on ordinary physical activity without discomfort.

Class II: Patients with organic heart disease, unable to carry on ordinary physical activity without discomfort:

A. Activity slightly limited.

B. Activity greatly limited.

Class III: Patients with organic heart disease, and with symptoms or signs of heart failure when at rest, unable to carry on any physical activity without discomfort.

Class E: Possible heart disease: Patients who show abnormal signs or symptoms referable to the heart but in whom the diagnosis of heart disease is uncertain.

Class F: Potential heart disease: Patients without circulatory disease whom it is advisable to follow up because of the presence or history of an etiologic factor that might cause disease.

The greatest difficulty in such a movement is the fear in the minds of the employers as to the result of the workmen's compensation act and the possible draining of sick benefit funds, if cardiac patients are given work and then break down in their employ. It is notoriously difficult to state positively that almost any occupation may not have contributed in some slight degree to the progression of a cardiovascular lesion that has finally ended in heart failure or sudden death. During the past few years I have given expert testimony in such cases before a compensation board referee and I have been impressed with the marked difference in various states as to the standards on which compensation board referees make their decisions as to the relationship of cardiovascular disease to sudden death. In Pennsylvania a man while filling a bucket at a marble hopper suddenly fell, striking his head on the edge of the marble hopper. He died within a few minutes and the coroner's diagnosis as to the cause of death was coronary thrombosis. The family was awarded compensation for accidental death, since the referee decided that if the man had not struck his head against the marble hopper as he fell, the coronary thrombosis might not have killed him!

TABLE 1.—*Ten Leading Causes of Death in New York City, 1875-1930* *

1875		1885	
All causes†	28.25	All causes	24.76
Pulmonary tuberculosis‡	373	Tuberculosis (all)	392
Diarrhea (under 5)§	316	Diarrhea (—5)	257
Diphtheria	294	Pneumonia	247
Pneumonia	242	Diphtheria	146
Smallpox	124	Heart	123
Violence	99	Violence	95
Heart	93.5	Nephritis	87
Nephritis	59	Cancer	51
Scarlet fever	54	Scarlet fever	45
Cancer	41	Typhoid	27
1905		**1930**	
All causes	18.32	All causes	10.76
Pneumonia	246	Heart	244
Tuberculosis (all)	238	Diarrhea (—5)	157
Nephritis	147	Cancer	116.5
Diarrhea (—5)	145	Pneumonia	115.6
Heart	144	Violence	81.8
Violence	109	Tuberculosis (all)	73.1
Cancer	73	Arterial disease	56.7
Diphtheria	38	Nephritis	41
Typhoid	16	Diabetes	25.6
Scarlet fever	12	Appendicitis	15.9

* This table was compiled by the Metropolitan Life Insurance Company of New York.

† Death rates from all causes are per thousand of population.

‡ Death rates from tuberculosis and other causes except diarrhea are per 100,000 of population.

§ Death rates from diarrhea under 5 years of age are based on the population under 5.

In the District of Columbia a man who for many years had placed fruit on a display stand of a fruit store and piled potato sacks in a corner developed a pain in his chest while lifting one of the potato sacks. He went home and went to bed. A few days later he developed evidence of congestive heart failure. A physician examined him and found a plus four Wassermann reaction, evidence of syphilitic cardiovascular disease with aortic insufficiency and congestive heart failure. Six months later the patient died, never having sufficiently recovered to arise from his bed. The referee awarded compensation to the family, since he decided that the lifting of the potato sack was a contributing factor in the development of the heart failure, in spite of the fact that his work the day of the so-called accident was no different than on any other day during the past few years.

In West Virginia a mule driver in a mine helped his mule by pushing a small coal car over a small incline. A few minutes later he developed an agonizing epigastric and anterior chest pain. He died a few minutes later, and the coroner's diagnosis as to the cause of death was coronary thrombosis. The compensation

This work has been done through the Robinette Foundation of the University of Pennsylvania and the M. W. Stroud Jr. Fellowship in Cardiology of the Pennsylvania Hospital.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. From an unpublished report by Mr. Sherman C. Kingsley.

2. Adopted and distributed by the American Heart Association, Inc., 50 West Fiftieth Street, New York.

105
935

board referee decided against awarding compensation to the family, since helping the mule at times was part of his ordinary duty in the place where he worked.

Until there is some uniformity in the workmen's compensation act in the various states, and some uniformity in the interpretation of the act by the various

Fig. 1.—A. L., aged 9 years. Home education. Rheumatic fever (arthritis); enlargement of the heart, mitral stenosis and insufficiency, aortic insufficiency; sinus arrhythmia; class 2B. This little girl went to school for only two days. Later she was taught in the Children's Heart Hospital. She was not able to return to school and when the visiting teacher made her first contact she found a 9 year old child who could read only at the first grade level and could not do better than 2A work in any subject. She had a great fear of returning to school because she was so far behind. In five months she has completed a year's work in the fundamental subjects and looks forward with pleasure to returning to school next September. Referred by Philadelphia Heart Association.

referees and courts, it will be a difficult matter to persuade employers to accept individuals handicapped by cardiovascular disease.

During the past twenty years the medical profession has learned that, in spite of valvular disease, many individuals can perform the average type of work without materially impairing their health or shortening their lives. The realization by the medical profession that infections appear to play a larger part in cardiac failure and the progression of cardiac disease than does physical effort should aid in the placement of cardiac patients in industry, if this impression, through public health education, can be passed on to the employer and the general public

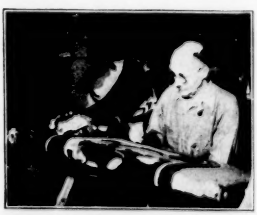

Fig. 2.—W. C. C., aged 60; arteriosclerosis; cardiac enlargement and coronary sclerosis; normal sinus rhythm; class 2B. This man was a World War veteran and was unable to procure employment for many years. He had vocational training at home for several years before his death. The occupational therapist trained him to make hooked rugs. He became quite an expert at this and the organization was able to dispose of them for him.

TRAINING IN SHELTERED WORK SHOPS [3]

In the sheltered work shop of the Philadelphia branch of the Shut-In Society and Vocational Adjustment Bureau for the Handicapped, which is financed by the Welfare Federation of Philadelphia, in three years' time there have been twenty-six persons with heart conditions classified from 2A to 2B. They worked at carpentry, machine and hand sewing, upholstery, and general work about the place.

In the machine and hand sewing department there were ten who worked six hours a day. They were paid from 75 cents to $1.68 a day and furnished milk for lunch. In the woodworking and upholstery departments fifteen persons worked from three to five days a week from five to seven hours a day. One worked at part time cleaning. They received from $1 to $2.80 a day. These persons accomplished a good normal day's work in these departments. There were no deaths and no accidents while at work. In a year two persons, both women, fainted and were treated in the rest room. Of these twenty-six cardiac patients, two have died as a result of their heart condition, but this was at home under ordinary circumstances. We have not been successful in placing any cardiac patients in industry through the Rehabilitation Bureau, but this I believe is due to the inefficiency of the local bureau and the present unemployment situation.

One patient who worked in the shop had progressed into a fine full time worker. Owing to lack of work she was placed on part time. With this extra time at home, she tried to take on the activities of other girls of her own age and is now in the hospital with a reactivation of her rheumatic fever.

One hundred and ninety-five persons with heart conditions are known to our organization. Of this number

Fig. 3.—N. D., aged 19; rheumatic fever; cardiac enlargement and mitral insufficiency; normal sinus rhythm; class 2A. Began working in the woodworking department, seven hours a day, Oct. 31, 1934, at $5 a week. Total wages, $53.58. Total time worked, three months. This young man is the only one employed in his family. He was very eager to work even though it was not possible to pay him a larger salary. He was very much interested in the work and did it very well.

fifty-seven could be employed if work were available; fifty are not employable and eighty-eight are under 16 years of age.

PLACEMENT OF CARDIAC PATIENTS IN EMPLOYMENT [4]

The placement of cardiac patients in suitable employment was carried on successfully from 1926 to 1932 by the Philadelphia Heart Association through a cooperative arrangement with the Philadelphia Health Council and Tuberculosis Committee. The entire placement service included persons with arrested tuberculosis as well as heart patients, but I shall speak only of the heart patients who were placed.

During the seven years from 1926 to 1932 a total of 280 heart patients were placed in employment, some of them more than once, so that a total of 388 jobs were filled by these patients. During the first three years of this service, no effort was made to ascertain the amount earned by the cardiac patients who were

3. Statistics supplied by Miss Ann Laws Calley, executive secretary of the Philadelphia branch of the Shut-In Society and Vocational Adjustment Bureau for the Handicapped.

4. Statistics supplied by Mr. Harvey Dee Brown, executive secretary of the Philadelphia Health Council and Tuberculosis Committee.

placed. But from the years 1929 to 1932 the earnings of heart patients placed by the service amounted to upward of $90,000.

During the time of the service twenty-two heart patients were placed in training, fifteen of whom had completed the training or were still carrying it on in December 1932. This work was then transferred to the State Bureau of Rehabilitation in 1933 and is being continued by the bureau.

The applicants for placement were referred from the twenty-one heart clinics of Philadelphia and by private physicians. Each applicant had a medical examination and a diagnosis card filled out by the referring physician. The diagnosis included etiologic, anatomic and physiologic factors, a functional classification and an indication of the work tolerance of the applicant in terms of the activities he would normally undertake. A statement of the applicant's limitations regarding stair climbing, standing, stooping, weight lifting and walking was included. In addition to this report, each applicant was studied individually by the social service worker in charge of this placement service, as to his employment history, his mental attitude and his abilities as a worker. Each presented an individual problem.

Finding employment for the applicants required persistent interviewing of employers. All sections of the city were included so as to place the applicants in work near their homes and reduce travel if possible. In order to get an idea of safe jobs in factories, as well as of the physical conditions existing in the plant, visits were made to various parts of the plants.

Few employers desire persons below par physically even for the simplest jobs. All placement work of handicapped persons requires persistent solicitation of the employers. They must be told that persons whose physical condition has been determined by an examination can be placed in suitable work and prove to be a definite asset. It is pointed out also that physically

Fig. 4.—J. T., a cardiac patient, engaged in machine and fine hand sewing. Referred by the Pennsylvania Hospital. Rheumatic fever; cardiac enlargement, mitral insufficiency, mitral stenosis; regular sinus rhythm; class 1.

handicapped workers, when properly placed, are usually permanent and faithful, since they appreciate having a job. The fact that a continuous follow up after placement is stressed which insures that the worker will not be allowed to remain on the job unless he can safely do so is pointed out. These arguments ordinarily reduce the employer's objections. Often after a handicapped person has been placed and proves to be a successful worker, calls are made for another handicapped worker.

A single illustration from the records of this service shows the value of this work. Rocco C. is a boy who had started to learn the plumber's trade. As it involved

Fig. 5.—R. B., aged 50 years, a cardiac patient engaged in woodworking. Rheumatic fever; mitral stenosis and insufficiency; normal sinus rhythm; class 2A.

a great deal of physical strain, which was showing its effect on his damaged heart, his physician insisted that he give it up. After Rocco had been seen and some idea of his capabilities had been obtained, he was sent to talk with the superintendent of a leather goods factory. This factory makes high grade leather purses, hand bags and toilet cases. Although the superintendent had said he would not be able to take on any beginners then, after talking with Rocco he employed him to begin the following day. Since then Rocco has had his troubles at home, as his father was out of work for some time, and much pressure was brought to bear to make him leave and get a job paying more money. This, however, he refused to do. Rocco has since had a raise, and the superintendent reports that he takes an interest in his work and is getting along nicely. Rocco's frequent correspondence corroborates this statement. His physical condition is satisfactory as reported by the clinic physician.

POSSIBILITIES FOR EMPLOYMENT IN INDUSTRY [5]

In the study of employment possibilities for the physically handicapped in Philadelphia industry, the occupations suitable for general cardiac patients have been defined by the following restrictions:

Generally good working conditions as to ventilation and comfort, without special hazard of materials, machinery, electricity, and so on.

Light work requiring no rapid movements of the body.

A minimum of nervous tension such as may be attendant on intensive production methods or the operation of high speed machinery.

5. Statistics supplied by Mr. F. W. Steuber, working for the Philadelphia branch of the Pennsylvania State Bureau of Rehabilitation.

COMMENT

No subdivisions of cardiac cases have been considered. It appears that the restrictions of work as given are sufficient to allow for the majority of patients not actually unemployable.

It will be noted that this study is not primarily concerned with the individual's disability but with the jobs that can be performed by the general class of those so handicapped.

TABLE 2.—*Vocational Possibilities for Heart Patients*

Skilled Labor	
Woodwork	**Electrical construction**
a. Cabinet making	a. Wiring signs
b. Novelty—small toys, jig-saw puzzles, bag tops, small weaving frames	b. Radio work c. Assembling electric cords, and the like
Textiles	**Mechanical drafting**
a. Chemistry	a. Making and filing blue prints
b. Weaving	b. Architectural planning
c. Designing	**Commercial art**
Commercial work	a. Advertising
a. Stenography and typewriting	b. Poster making
b. Filing and indexing	**Designing**
c. Telephone operator	a. Jewelry
Handiwork	b. Clothes
a. Basketry and caning	c. Wallpaper, linoleum
b. Fine sewing	**Vocational music**
c. Quilting	a. Playing an instrument
d. Hooked rug making	b. Teaching an instrument
e. Leather art	**Librarian (no lifting of heavy books)**
f. Monograming	**Dressmaking**
g. Embroidery	**Millinery**
Jewelry	**Hairdressing**
a. Polishing	**Tailoring**
b. Engraving	**Shoe cobbling**
c. Filing	**Necktie cutting**
d. Soldering	
e. Carding	
Unskilled Labor	
Factory Work*	
a. Packing and dressing dolls, painting faces, making dolls' clothes	
b. Lining trays and drawers, riveting small parts in trunk factory	
c. Stripping and packing tobacco	
d. Finishing, running ribbons, packing in garment factory	
e. Packing in any factory where objects handled are not heavy	
Errand boy	**Clerical work, filing**
Office boy	**Kitchen work in hotels**
a. Stamping	
b. Labeling	
c. Sorting slips	
d. Folding posters	

* If a factory has signed an NRA code, it may not employ any children under 16, but the labor law has not yet been changed.

In the pursuance of this study, 40,000 workers have been more or less directly observed in the performance of 1,000 different operations in twenty-five industries. Since these operations at present employ as many more workers not observed and the total grows to 115,000 in normal times—about half of the 200,000 odd normally employed in manual work in Philadelphia industries, when common labor and the higher brackets have been excluded—the coverage is considered sufficient to represent the whole. The data gathered during the study of these operations from the standpoint of performance of the specifically handicapped has been tabulated on the basis of possibilities per thousand workers in each industry. For the cardiac classification, the data are given in table 3.

The large variations among the industries reflect primarily the differences in the character of the work. In some cases, notably hat and cap manufacturing, the influence of a strict medical examination of employees is paramount. It must also be admitted that the individual making the study has had an influence in some cases, though these men have all been engineers with industrial experience.

A number of other industries have been covered without tabulations having been made. The general showing bears out the figures of the tables, indicating that 25 per cent of all jobs in industry are possible of performance by this class of handicapped person without compromising either the job or the job holder.

CONCLUSIONS

1. Vital statistics suggest that individuals with cardiovascular disease comprise as large a group, if not the largest group, of persons with physical handicaps.

2. It seems questionable whether physical effort is responsible for the production of cardiovascular disease or plays as large a part in the progression of cardiovascular disease as has been previously believed. If this is true, the training of cardiac patients and their placement in industry constitute as great a responsibility for the physician as any other form of therapeutics—in fact, in class 1 and 2A cases a much more important responsibility than medication or other forms of therapy.

3. With proper functional classification by private physicians or physicians in heart clinics, with especially trained placement workers in city and state rehabilitation bureaus, cardiac patients in much larger numbers than previously recognized may earn a living through training in sheltered work shops with ultimate placement in industry, or, if previously trained, through direct placement in industry.

4. If common labor is divided into two classes, namely, light labor and heavy labor, almost 100 per cent of cardiac patients, except those in class 3, are employable at light labor.

5. To accomplish such rehabilitation and placements, it is necessary to obtain the interest of the medical pro-

TABLE 3.—*Possibilities for Employment of Cardiac Patients in Philadelphia Industry* *

Industry	Probable Number per 1,000	Normal Employment	Number of Cardiac Patients Employable in Normal Times
Storage battery manufacturing	56	4,500	252
Radio set manufacturing	697	13,200	9,200
Hat and cap manufacturing	...	8,000	.....
Glass manufacturing and processing	144	1,200	173
Milk distribution	28	4,000	112
Ball bearing manufacturing	164	1,400	230
Knit goods manufacturing	245	6,000	1,470
Hosiery manufacturing	230	18,000	4,140
Garage service	680	5,000	3,400
Machine tool manufacturing	435	2,000	870
Printing and publishing	....	12,000	.....
Drug manufacturing	678	1,000	678
Paper manufacturing	....	1,000	.....
Recording instrument manufacturing	846	1,500	1,269
Leather tanning and dyeing	...	3,500	.....
Gear manufacturing	268	500	134
Mail order industry	248	3,000	744
Cigaret and cigar manufacturing	1	6,100	6
Paint manufacturing	...	2,000	.....
Sugar refining	392	1,100	431
Shoe manufacturing	153	3,500	536
Bakery industry	292	6,000	1,932
Confectionery manufacturing	506	3,200	1,619
Sporting goods manufacturing	946	600	568
Laundry industry	...	5,000	.....
		113,300	27,764
These are separated into six classes. For 1,000 in each class the figures are:			
Men			
Novice	310	9,600	2,976
Trained	159	16,200	2,576
Skilled	144	45,000	6,480
Women			
Novice	479	7,900	3,784
Trained	270	22,800	6,156
Skilled	483	11,800	5,699

* Table prepared by Mr. F. W. Steuber, working for the Philadelphia branch of the Pennsylvania State Bureau of Rehabilitation.

fession and to impress physicians with their responsibility toward the handicapped, and the necessity of cooperating with the social service workers, especially trained placement workers and city, state and county rehabilitation bureaus. Employers should be carefully approached and educated. Finally, and perhaps most important of all, is the sympathetic handling of the unfortunate individual handicapped by cardiovascular disease.

1011 Clinton Street.

A CRITICAL ANALYSIS OF HEART DISEASE MORTALITY

O. F. HEDLEY, M.D.
Passed Assistant Surgeon, U. S. Public Health Service
PHILADELPHIA

The statement that heart disease is the leading cause of death has become almost axiomatic. Despite the voluminous literature that has been developed regarding heart disease mortality, most of the writers have been uncritical of the sources from which such information is obtained and of current practices in compiling vital statistics. My purpose in this article is to discuss frankly the accuracy with which deaths from cardiac diseases are reported and to appraise present-day methods of computing heart disease mortality statistics. I shall show that the official system of tabulating heart disease mortality is not keeping pace with well established advances in clinical medicine and offer suggestions for improving it.

HOW ACCURATE ARE HEART DISEASE MORTALITY STATISTICS?

To determine the present status of heart disease mortality statistics, a study was made of deaths attributed to heart disease in Washington, D. C., during 1932 by analyzing death certificates filed in a routine way throughout the year. It was obviously impossible to ascertain the accuracy of the entire number of deaths listed as being due to heart disease. Through the courtesy of every hospital in the city, permission was obtained to review intensively the clinical records not only of fatal cases officially recorded as heart disease but also of deaths listed under other titles, to determine the possibility of heart disease playing a rôle in the fatal termination. It is with the deaths occurring in hospitals that this paper will largely deal, although references will be made to deaths attributed to heart disease occurring in the city at large.

There were all together 1,631 deaths listed in the office of the registrar of vital statistics as being due to heart disease, 416 of which were reported from hospitals (table 1). In sixty-six instances the clinical records could not be used because of insufficient evidence, these described deaths occurring en route or within twenty-four hours after admission. There remained 350 deaths attributed to heart disease with clinical records sufficiently complete to determine whether the deaths were due to heart disease, and, if so, the etiologic factors in most cases.

On review of the records it was found that in seventy-one instances, or slightly over 20 per cent, the clinical records indicated that the cause of death was due to conditions other than heart disease. Of the deaths recorded as heart disease but found to be due to other diseases pulmonary tuberculosis occurred most frequently, cerebral hemorrhage came second and malignant conditions third (table 2). Of these seventy-one deaths the actual cause was determined by necropsy in thirty-four instances. It should be noted that the list included no deaths from senility or borderline cases of nephritis or similar conditions in which the cause might reasonably be considered due to heart disease or to the other condition.

The etiologic factors involved in these 450 fatal cases of heart disease included arteriosclerosis and hypertension in 61.4 per cent, rheumatic infection (active and inactive) in 13.3 per cent, syphilis in 12.0 per cent, bacterial endocarditis and pericarditis in 4.7 per cent, congenital malformations in 2.0 per cent, thyrotoxicosis in 1.3 per cent, cor pulmonale in 0.4 per cent, tuberculous pericarditis in 0.2 per cent and undetermined etiology in 4.7 per cent. These percentages approximate quite closely those of numerous other workers dealing with both clinical and necropsy material. A more detailed account of these observations with special emphasis on the differences in etiologic factors in the races and sexes has been made the subject of another article now in course of publication.[1]

The extent to which heart disease mortality was recorded as heart disease varied considerably with the different etiologic categories. Only 64.5 per cent of the arteriosclerotic-hypertensive forms of heart disease were so tabulated. Of the deaths from rheumatic heart disease, only 60 per cent were so listed. Of the deaths from syphilis of the thoracic aorta and heart, only 51.8 per cent were included under heart disease. The deaths from subacute bacterial endocarditis were recorded as heart disease in 85.7 per cent of instances, the highest of any etiologic type (table 3). None of the nine deaths from congenital heart disease were incorporated into the mortality statistics as heart disease, and only one of five deaths from thyrotoxic heart disease was so tabulated.

Furthermore, there was no relation between the etiologic factors and the recorded causes of death. Thus, of the forty-eight deaths attributed to chronic endocarditis, nine were due to arteriosclerotic changes, twenty-one to rheumatic infection, thirteen to syphilis, four to bacterial endocarditis, and one to heart disease of undetermined etiology. With the present system of tabulating heart disease mortality an attempt is made to group arbitrarily quite dissimilar clinical and pathologic conditions. The result is that, in each of the titles and subtitles into which deaths from heart disease are catalogued, diseases are included that have no relation to one another.

Referring to table 3, it should be noted how frequently deaths from heart disease are recorded as due to the conditions etiologic of it. This is due to the trend toward diagnosing heart disease along etiologic lines. If mention is made on death certificates of causative factors, they are not tabulated as heart disease; if reported as organic heart conditions, no consideration is given the various underlying infections and metabolic disturbances.

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This study was made while the author was stationed at Washington, D. C., and will be described in greater detail in a Public Health Service bulletin entitled "Studies of Heart Disease Mortality." More definite recommendations are made in the forthcoming bulletin.

1. Hedley, O. F.: The Etiology, Race and Sex of 450 Fatal Cases of Heart Disease Occurring in Washington (D. C.) Hospitals During 1932, Pub. Health Rep., to be published.

EXPLANATION OF THE UNSATISFACTORY STATE OF HEART DISEASE MORTALITY STATISTICS

The reasons for the unsatisfactory state of heart disease mortality statistics are fourfold: (1) mistakes in signing death certificates, (2) weaknesses inherent in the present system of recording heart disease mortality, (3) misinterpretations and lack of competent professional supervision in offices of vital statistics, and (4) the theory that a definite cause should be assigned to each death, even though the knowledge of the case does not warrant it.

TABLE 1.—*Sources of Material and Extent of Errors in Recording Hospital Deaths from Heart Disease, Washington, D. C., 1932*

1. Total deaths in Washington, D. C., officially recorded as due to heart disease according to International List of Causes of Death (titles 90-95)	1,631
2. Deaths in hospital patients officially recorded as due to heart disease (titles 90-95)	416
3. Deaths in hospital patients officially recorded as heart disease (titles 90-95) not studied because of incomplete clinical records	66
4. Deaths with hospital records sufficiently complete for study	350
5. Deaths in hospital patients officially recorded as heart disease (titles 90-95) but considered on review of the hospital records as having been due to other conditions (30% error in reporting and recording)	71
6. Deaths officially recorded as heart disease and considered on review as due to this cause	279
7. Deaths not officially recorded as heart disease according to the International List of Causes of Death, but considered on review as due to this cause (38% error of omission)	171
8. Total deaths in hospital patients considered after review to have been due to heart disease	450
9. Percentage of deaths from heart disease officially recorded as heart disease (titles 90-95) according to the International List of Causes of Death	62%

The accuracy of any system of vital statistics depends on the diagnostic skill and care used by the practicing profession preparing death certificates. In the matter of reporting mortality, heart disease may be called "the Great Convenience." The idea seems to prevail in many quarters that "when in doubt call it myocarditis." Without attempting to minimize the significance of heart disease as a clinical or public health problem, the fact nevertheless remains that many diagnoses of heart disease are made without an adequate factual basis.

The main reason for this is that death occurs in many conditions other than heart disease after varying degrees and duration of congestive heart failures. Consequently attention is focused on the heart during the terminal stages of many diseases not primarily cardiac. The family of the patient is informed that the heart is weak, consultations are not infrequently held, and medication is administered to maintain the heart action. This is justifiable from both humanitarian and therapeutic points of view. The trouble is that, when death occurs, undue emphasis is placed on the heart in signing the death certificate. It should be remembered that, while cardiac failure is clinically easily detectable and to a certain extent combatable, other organs show evidence of agonal failure. One shudders to think of the number of contested wills and other forms of litigation that would result if diagnoses of encephalopathies or mental insufficiency were made as frequently in cases showing terminal clouding of the sensorium as diagnoses of myocarditis or myocardial insufficiency are now made.

Heart disease is not infrequently purposefully assigned as the cause of death from other conditions. This is especially true in the South, where certain insurance companies with Negro policyholders refuse to pay benefits on deaths due to tuberculosis and syphilis. Deaths from such conditions or malignant growths are sometimes reported as heart disease to save the feelings of the bereaved family. There is also too great a tendency to report deaths as due to heart disease when the exact cause is not known. In general, heart disease is a "safe" diagnosis, one frequently expected and not often questioned by members of the family, bureaus of vital statistics, or insurance companies.

Owing to the necessity of filing death certificates prior to moving a body, they are sometimes hastily prepared. It often happens in hospital practice that after the death certificate has been completed permission for necropsy is obtained. The actual cause of death is determined but the death certificate is not corrected. This has been overcome in some places by requiring the pathologist as well as the clinician to certify the cause of death in cases in which postmortem examinations are held.

Many of the terms used in ascribing causes of death are indefinite or obsolete. Thus, of the seventy-one deaths listed as heart disease but found on examination of the records to be due to other causes, the diagnoses in fifty instances were myocarditis, myocardial degeneration or myocardial insufficiency, while only three were diagnosed along etiologic lines. While the use of an etiologic basis is not suggested as a panacea for all mistakes in diagnosis, the use of correct terminology implies greater accuracy of thought, or at least a more comprehensive knowledge of the subject. Certainly the converse seems to apply. Mistakes are more common when inexact or antiquated terms are used.

Some physicians appear to have faith in the adage that there is strength in numbers. A total of 3,506 diagnostic expressions relating to heart disease were used in describing 1,631 deaths. Not infrequently three items were found on a death certificate. Some contained as many as six. Many of the terms used were nearly synonymous. Others were descriptive only of symptoms, signs or terminal events. It is difficult to see what place such terms as dyspnea, ascites, edema, heart failure or cardiac asthma have on death certificates, either as primary or as contributing causes. The routine use of multiple diagnoses is cumbersome and makes the adjudication of the cause of death extremely difficult. It would be far better to describe a death as "rheumatic pancarditis" than as "endocarditis, myo-

TABLE 2.—*Deaths Occurring in Washington, D. C., Hospitals During 1932 and Recorded as Being Due to Heart Disease but Actually Due to Conditions Listed Below*

Diagnoses	Number	Necropsies
Pulmonary tuberculosis	13	9
Cerebral hemorrhage	9	3
Malignant conditions	6	4
Prostatic hypertrophy	5	0
Pelvic inflammation	4	4
Septicemias	4	1
Cellulitis	3	0
Enterocolitis	3	1
Gallbladder diseases	3	1
Fractures	2	0
Meningitis	2	0
Lung abscess	2	0
Alcoholism	1	1
Arsenic poisoning	1	1
Arteriosclerotic gangrene	1	1
Diphtheria (laryngeal form)	1	1
Epilepsy	1	1
Hemorrhage of gastric ulcer	1	1
Leukemia	1	1
Lobar pneumonia	1	1
Syphilitic meningitis	1	1
Phenobarbital poisoning	1	0
Mastoiditis	1	0
Postoperative hernia	1	0
Pulmonary embolism	1	0
Toxic hepatitis	1	1
Typhoid fever	1	1
	71	34

carditis and pericarditis," or as "hypertensive heart disease" rather than as "myocarditis, cardiac enlargement, high blood pressure and cardiac asthma."

While errors and laxities in diagnosis constitute more than a mote in the eye of the practicing profession, it is not a beam of such magnitude as that in the eye of those entrusted with the collection and tabulation of mortality statistics.

The International List of Causes of Death [2] was promulgated in 1853 during a period when interest centered around the discovery and clinical interpretation of organic lesions. Although the product of many revisions, the present list, prepared in 1929, is a not dissimilar elaboration of the first one. Heart disease mortality is tabulated under pericarditis, endocarditis, myocarditis and diseases of the myocardium, angina pectoris and diseases of the coronary arteries, and other diseases of the heart. The chief difficulty is that of the American Heart Association, and some form of etiologic classification, usually that of the American Heart Association, is used by practically all of 250 other cardiac clinics not affiliated with that organization.[5]

The etiologic classification of heart disease has recently received a further impetus by the inclusion of the American Heart Association nomenclature in the Standard Nomenclature of Disease [6] prepared in 1933 under the auspices of the Commonwealth Fund. Copies have been sent to about 550 hospitals. One hundred and fifty institutions are known to have adopted it and it is believed that about 300 are now using it.[7] Most of the university hospitals in the country have already adopted this classification.

The Office of Heart Disease Investigations of the Public Health Service sent questionnaires to 1,400 hospitals, inquiring about the use of etiology in their classification of diseases. Of 1,000 thus far reporting,

TABLE 3.—*Extent to Which the Etiological Types of 450 Fatal Cases of Heart Disease Occurring in Washington, D. C., Hospitals Were Officially Recorded as Being Due to Heart Disease According to International List of Causes of Death*

		Etiologic Types of Heart Disease							
		Arterio-sclerotic Hyper-tensive	Rheu-matic	Syphi-litic	Bac-terial	Congen-ital	Thyroid	Other	Undeter-mined	Total
A. Deaths recorded as being due to heart disease (titles 90-95)										
90	Pericarditis	1	2	..	..	..	..	1	1	5
91	Acute endocarditis	..	3	..	11	..	..	..	..	14
92	Chronic endocarditis	9	21	13	4	..	..	..	1	48
93	Chronic myocarditis	122	5	13	2	..	..	1	9	152
94	Angina pectoris and diseases of the coronary arteries	13	1	1	..	..	..	..	1	16
95	Other diseases of the heart	33	4	1	1	..	1	..	4	44
	Total deaths from heart disease so recorded (titles 90-95)	178	36	28	18	0	1	2	16	279
B. Deaths from heart disease recorded as due to other conditions										
34	Syphilis	2	3	20	..	1	..	..	..	26
56	Acute rheumatic fever	..	10	..	1	..	..	..	1	12
66B	Exophthalmic goiter	..	..	..	..	..	5	..	..	5
96	Aneurysms	1	..	3	..	..	..	..	..	4
97	Arteriosclerosis	10	..	..	..	..	..	..	..	10
98	Other diseases of the arteries	11	..	..	1	..	..	..	..	12
102	Anomalies of blood pressure	1	..	..	..	..	..	..	..	1
115A	Diseases of tonsils	..	2	..	..	..	..	..	..	2
130-132	Nephritis and other diseases of kidneys	63	8	3	1	..	..	..	2	77
157C	Congenital malformation of heart	..	..	..	..	8	..	..	..	8
	Miscellaneous conditions, including diabetes mellitus, diseases of the spleen, cardial hemorrhage, dementia paralytica, bronchopneumonia, congestion of the lungs, asthma, and so on	10	1	..	..	..	..	1	2	14
	Total deaths from heart disease recorded as other than heart disease	98	24	26	3	9	5	1	5	171
	Total deaths from heart disease (A and B)	276	60	54	21	9	6	3	21	450
	Necropsies	81	27	29	12	0	4	2	2	157
	Percentage of total deaths recorded as heart disease	64.5	60.0	51.8	85.7	0	16.6	..	..	62.0

heart disease is no longer thought of clinically in terms of structural diagnoses but along etiologic lines. It is impossible to interpret satisfactorily etiologic diagnoses in terms of the International List of Causes of Death. This, together with improvement in diagnosis, results in a continuous ebb and flow of deaths computable as "organic diseases of the heart" and a constant realinement of diseases tabulated under this heading. It is doubtful whether mortality statistics from heart diseases in one decade closely parallel those of another.

Etiology is the basis of modern clinical diagnosis. This developed from the observation by Cabot [3] in 1914 that most heart disease was due to arteriosclerosis, rheumatic fever, syphilis and thyrotoxicosis. Since then a number of etiologic classifications have been devised, notably that by the Heart Committee of the New York Tuberculosis and Health Association and now sponsored by the American Heart Association.[4] This nomenclature is now in use in the ninety-six member clinics nearly 500 indicated the use of some form of etiologic nomenclature.

This emphasis on etiology is no passing fad. It is being incorporated into the standard textbooks not only on heart disease but on general medicine. Practically every medical school in the country is teaching heart disease from this point of view. It reflects a real advance in clinical concepts and will probably be the permanent basis for cardiac diagnosis.

Certain deaths previously tabulated under other categories are now considered due to heart disease. At one time it was thought that most deaths associated with arterial hypertension were due to nephritis. Now many of these are grouped under heart disease. Deaths previously attributed to senility are now listed as heart disease. "Acute indigestion" is a thing of the past. Only three such deaths were listed among 7,949 deaths in Washington, D. C., during 1932.[8] Most

2. Manual of the International List of Causes of Death, ed. 4, Paris, 1929, U. S. Dept. of Commerce, Bureau of the Census.
3. Cabot, R. C.: The Four Common Types of Heart Disease, J. A. M. A. **63**: 1461 (Oct. 24) 1914.
4. Criteria for Classification and Diagnosis of Heart Disease, ed. 3, New York Tuberculosis and Health Association, 1932.
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6. Standard Nomenclature of Disease, Prepared under the auspices of the Commonwealth Fund, New York, 1933.
7. H. B. Logie, executive secretary, National Conference on Nomenclature of Disease, personal communication to the author.
8. Annual report of Health Department of the District of Columbia for 1933.

of such cases are recognized as coronary thrombosis. On the other hand, there has been a splitting off of deaths formerly listed under organic diseases of the heart but now diagnosed along etiologic lines. Deaths previously diagnosed as aortic insufficiency and listed as heart disease are now diagnosed as syphilitic heart disease and tabulated not under heart disease but as syphilis. Deaths from acute rheumatic carditis are recorded under title 56, "rheumatic fever," as though the joint and not the cardiac manifestations were the cause of death. Deaths from the more chronic forms of rheumatic heart disease, while recorded as heart disease, are placed in various titles and subtitles, depending on the slightest variation in the wording of death certificates. If diagnosed as "rheumatic valvular disease," deaths are considered due to endocarditis, while, if diagnosed as "rheumatic heart disease," they are tabulated under "other diseases of the heart." Congenital heart disease is tabulated as a separate subtitle under congenital malformations. Thyrotoxic heart disease is recorded under various forms of goiter, while the myxedema heart is listed under myxedema.

Within the group of diseases listed as "organic diseases of the heart" there is a constant change in interpretation. Halsey [9] pointed out that from 1922 to 1926 in New York state deaths reported as chronic myocarditis increased from 34.1 to 48.6 per cent of the total recorded mortality. During this period, deaths from valvular diseases decreased from 23 to 15.7 per cent. During that period the profession was "myocardially minded." Since then it has become more fully recognized that in many cases the functional ability of the myocardium depends on the state of the coronary arteries and that coronary arteriosclerosis not infrequently results in death from congestive failure without coronary thrombosis or the anginal syndrome. Consequently, another shift is now in progress. As it is generally observed that diagnoses based on etiologic conceptions tend to be made more uniformly, it is believed that the use of an etiologic basis for computing mortality statistics would serve as a balance wheel against fads and fancies in diagnosis.

To enable registrars of vital statistics to determine which of two or more diagnoses occurring on a death certificate is to be assigned as the cause of death, a manual of joint causes of death has been prepared. The necessity for such a manual becomes apparent when it is considered how frequently multiple diagnoses are made. Many of the rulings contained in this manual appear to be highly arbitrary. For example, nephritis takes precedence over heart disease if the two are mentioned jointly on a death certificate. Thus, if nephritis is listed as a secondary diagnosis while the primary cause of death is rheumatic heart disease or subacute bacterial endocarditis, the cause of death is officially attributed to nephritis.

This system of selecting the outstanding diagnostic factors becomes even more involved when only the diseases of the heart are considered. Chronic myocarditis is given precedence over diseases of the coronary arteries, although in reality the myocardial changes are secondary to those in the coronary arteries. Angina pectoris, on the other hand, is favored over chronic myocarditis. Chronic myocarditis is preferred over acute endocarditis but is regarded as less significant than chronic endocarditis. Angina pectoris takes preference over diseases of the coronary arteries, despite the fact that angina pectoris is generally considered due to coronary insufficiency. It was found that in Washington, D. C., during 1932 angina pectoris was mentioned on seventy-two death certificates, as the primary cause of death in only fifty-eight instances, but was the recorded cause of sixty-eight deaths. Coronary thrombosis was listed on 259 death certificates, on 144 of which as the primary cause of death, but only seventy-eight deaths were officially ascribed to diseases of the coronary arteries. This lack of correlation between the reported causes of death and the official tabulation occurred in practically each title and subtitle included under "organic diseases of the heart."

Not infrequently death certificates diagnosed according to approved and widely accepted methods are returned to physicians for correction largely because of difficulties in interpreting such diagnoses in terms of the International List of Causes of Death. For example, hypertensive heart disease is frowned on as a cause of death, yet it is a condition recognized in modern textbooks [10] and by the American Heart Association.[4] I have seen diagnoses of hypertensive heart disease made in university hospitals in two cities returned for correction and have had cardiologists of nation-wide reputation tell me of the difficulties in having their diagnoses accepted by offices of vital statistics. This places a premium on incorrect diagnoses or the use of obsolete terminology and is not playing fair with the profession.

Apropos the last paragraph, one of the chief sources of error is due to lack of competent professional supervision in offices of vital statistics. It was found that in Washington, D. C., diagnoses of coronary thrombosis were recorded under heart disease while those of coronary occlusion were tabulated under diseases of the peripheral arteries. It is doubtful whether any health department is so understaffed that death certificates cannot be reviewed by a graduate in medicine. Under no circumstances should the lay personnel be permitted to challenge physicians' diagnoses.

One of the chief hindrances to better mortality statistics of heart disease is the fallacious idea that death certificates must necessarily contain some precise cause of death, even though the facts of the case do not warrant it. This is especially significant with regard to coroners' cases and other forms of sudden death. While most sudden deaths are due to heart disease, this is not always the case. Many such diagnoses are made on very meager knowledge. This is not always the fault of the coroners, as in several states they are not permitted to hold necropsies except when there is presumptive evidence that death is due to intentional violence by some other person. In many localities, coroners are not given sufficient funds to hold necropsies except in cases with medicolegal implications. It is suggested that greater latitude be given in such cases and that diagnoses of "sudden death due to natural causes" be permitted more frequently. This also holds for deaths from natural causes occurring in private practice, when the physician does not know and cannot determine the exact cause.

SUGGESTIONS FOR IMPROVEMENT

The current system of compiling heart disease mortality is entirely out of step with modern clinical concepts. The anomalous situation exists that, within certain limits, the more accurately heart disease is

9. Halsey, R. H.: Etiology of Heart Disease, J. A. M. A. **98**: 593 (Feb. 20) 1932.

10. White, P. D.: Heart Disease, New York, Macmillan Company, 1932. Lewis, Thomas: Diseases of the Heart, New York, Macmillan Company, 1933. Musser, J. H.: Internal Medicine, Philadelphia, Lea & Febiger, 1934.

V 1
193

reported the greater will be the difficulties of interpretation in terms of the International List of Causes of Death. Unless revised, it will eventually become a sort of statistical anachronism.

The International List of Causes of Death was devised for the purpose of obtaining relatively uniform vital statistics throughout the civilized world. In most cases it serves a useful purpose. It is recognized by law and treaty agreements. There is no possibility of replacing this system or even of materially altering it prior to the next decennial revision in 1940. At the next meeting of the International Commission, serious consideration should be given plans whereby heart disease mortality may be tabulated along lines in keeping with approved clinical practices. Incidentally, it would be interesting to learn to what extent heart disease is being reported along etiologic lines in other countries.

Meanwhile there are several steps which can be taken to improve heart disease mortality statistics. Physicians should be encouraged to report deaths from heart disease from the point of view of etiology. Descriptions of organic lesions and of significant physiologic changes should be made with and after the etiologic diagnosis. In the matter of tabulation, however, the entire diagnosis of heart disease should be considered as a unit. This could be accomplished by giving the etiologic diagnosis greater weight than other factors in the Manual of Joint Causes of Death.[11]

The profession is urged to diagnose as heart disease only those deaths in which there is manifest evidence of heart disease as determined by the clinical course, history and laboratory evidence of established etiologic factors, and the finding on physical examination and at necropsy of organic cardiac lesions. The implication of the heart in cases of terminal congestive failure due to other causes is to be deprecated. Diagnoses should be made with an exactness of terminology commensurate with the knowledge of the cases. Physicians, especially coroners, should be permitted greater latitude in ascribing deaths to natural but ill defined causes when the facts do not permit greater exactness. It should be remembered that there is nothing gained in superficial statistical accuracy at the expense of basic information.

Offices of vital statistics should refrain from questioning diagnoses made along approved clinical lines, unless there is some reason to doubt their validity. The ultimate classification of causes of death should not be left to laymen but should be made by professionally trained individuals.

With regard to the classification of deaths reported along etiologic lines, it is suggested that they be placed in subtitles under their various respective causative factors. This can be accomplished without materially affecting the present scheme of recording vital statistics. There is a precedent for this in the case of congenital cardiac malformations. These are not tabulated as heart disease but in a separate subtitle under congenital malformations. Similarly, deaths reported as thyrotoxic heart disease should be placed in a separate category under exophthalmic goiter or toxic adenoma of the thyroid. Those from syphilitic heart disease and aneurysms of the thoracic vessels due to syphilis should be tabulated as definite subtitles under syphilis. Although, strictly speaking, in view of the recent work by Rothschild, Kugel and Gross,[12] who have found evidence of active rheumatic infection in most cases of rheumatic heart disease, all deaths from rheumatic heart disease should be placed under rheumatic fever, it is doubtful whether this can be done at present without too greatly disrupting the prevailing scheme of recording vital statistics. It is recommended, however, that deaths so reported be set aside in separate categories under heart disease. Similarly deaths from hypertensive and arteriosclerotic forms of heart disease should be listed as distinct entities.

11. Manual of Joint Causes of Death, U. S. Department of Commerce, Bureau of the Census, 1932.

12. Rothschild, M. A.; Kugel, M. A., and Gross, Louis: Incidence and Significance of Active Infection in Cases of Rheumatic Cardiovascular Disease During the Various Age Periods, Am. Heart J. 9: 586 (June) 1934.

SUMMARY AND CONCLUSIONS

1. The present method of reporting and tabulating heart disease mortality statistics does not reflect a true picture of heart disease mortality. Only 80 per cent of deaths occurring in hospitals in a large city and tabulated for the purpose of vital statistics as due to heart disease were found on examination of the hospital records to be due to that cause, while only 62 per cent of deaths due to heart disease were so officially recorded. It is not possible to obtain an accurate conception of the total number of deaths from heart disease or of any of the various etiologic types.

2. Within certain limits, the more accurately heart disease is diagnosed the less reliable are the official mortality statistics. This is due to the difficulties in interpreting diagnoses made along etiologic lines in terms of the International List of Causes of Death. It is quite likely that with further advances in clinical medicine these points of view will become more divergent and vital statistics even more unreliable.

3. Steps should be taken to remedy this situation. It is proposed that heart disease when reported along etiologic lines shall be tabulated as subtitles under the respective etiologic categories. Consideration should be given toward eventually revising the International List of Causes of Death so that heart disease mortality may be officially recorded on an etiologic basis.

4. Physicians are urged to use etiologic diagnoses in reporting heart disease mortality. Registrars of vital statistics should be most loath in questioning death certificates containing approved clinical terms.

5. It should be recognized by practicing physicians, coroners and statistical officials that the employment of superficially accurate diagnosis based on insufficient evidence results only in the vitiation of mortality statistics in general.

6. Many diagnoses of heart disease are made without sufficient evidence. While the use of an etiologic terminology is not suggested as a panacea for intentional misstatements, it is believed that fewer mistakes are made when heart disease is diagnosed in terms of its causative factors.

Maloney Building, University of Pennsylvania.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SPRAGUE AND WHITE, COHN, FAHR, STROUD AND HEDLEY

DR. HAVEN EMERSON, New York: The International List of Causes of Death undergoes a decennial revision at the beginning of each decade, at which time organized clinical and pathologic opinion has opportunity to effect desirable changes in terminology. Preliminary recommendations for the revision that will be made in 1938 have already taken into consideration suggestions for classification of deaths from heart diseases offered by a committee of clinicians of the American Heart Association. Etiologic classification is used whenever practicable throughout the list. Until recently, following such papers as those presented by Dr. Fahr, there has been no

approximate agreement as to the specific etiology of the 80 per cent of all deaths attributed to heart diseases, apparently chiefly related to the process of senescence. The registrar of vital statistics of the local or state health department has recourse to the querying of death certificates by mail. When ambiguity of terms occurs there is uncertainty as to relative importance of primary and secondary causes as stated by the physician. This is not to be considered a criticism of the clinician who certified to the cause of death but as a means of avoiding errors in classification. The registrar cannot practically follow the method used by Dr. Hedley, and I doubt whether the method can be relied on to improve the accuracy of death certificates. In general the cause of death certified by a physician who cared for the patient during life and observed the manner of death is a more valuable record than the opinion of a subsequent student of the record who did not see the patient dead or alive. It is important to recognize that such standard lists as the International List of Causes of Death and the National Standard Nomenclature of Disease represent only an approximation to an ideal and lag somewhat behind the ideas of specialists. They are, however, indispensable for comparability of morbidity and mortality experience and are responsible for a high degree of trustworthiness in American vital statistics and for the records of disease prevalence in the leading hospitals in this country. I assume that Dr. Sprague distinguishes in his own mind between decrease in heart disease attributed to syphilis and decrease in the incidence of syphilis itself. No one can have heard the statements and seen the charts offered by Dr. Cohn without being impressed by the necessity of withholding all judgment on trends in cardiac mortality unless age specific death rates for each of the rubrics of heart disease are presented. In a general way a good index of a high level of health of a community is found in a low and decreasing death rate from heart diseases in persons less than 50 years of age and a high increasing rate in persons 60 years of age and over. Improved life expectancy at all ages up to 60 years and lowered mortality from practically all preventable causes of death are consistent with a rising death rate from heart diseases, particularly in persons over 60 years of age.

DR. HAROLD E. B. PARDEE, New York: Dr. Sprague's summary of our present knowledge of the prevention of the different etiologic types of heart disease shows us just where we are strong and where we are weak. When it comes to hypertension and arteriosclerosis, we are barren of definite suggestions because we do not properly understand the cause of these conditions. It is important to reveal the relative weight of coronary arteriosclerosis and hypertension in producing the cardiac syndrome of failure. Only with this in mind can one clearly understand the rôle of hypertension. I feel that hypertension has been overstressed by many and I would be inclined to give arteriosclerosis more importance in these patients than it has often received; I do not intend to imply that it should have more importance than Dr. Fahr has given it. Dr. Stroud's work is along practical lines, because, after all, physicians have more to do with the management and treatment of patients with heart disease than they do with prevention. Since patients have heart disease and must work during so many years when they have heart disease and since heart disease is being discovered so much more frequently in its early stages by the industrial, life insurance and school examinations, a practical study along these lines is important. The factors to be taken into account in considering occupation are multiple. We must be concerned with the influence of the patient's projected occupation on the etiologic factor of his disease, and with its influence on his functional cardiac capacity. Lastly, there are occasional anatomic features which must be taken into consideration, such as the influence of a large aortic dilatation due to syphilis or arteriosclerosis. Dr. Cohn's work has impressed me with the importance of using thought rather than mathematical processes, in the analysis of figures. Such an analysis is vastly more important than the mere tabulation that is usually presented to the medical profession and that has led, as he pointed out, to various errors. Of course, the influence of changing diagnostic titles during past years is a difficult one to eliminate. It certainly has been present and there, of course, one encounters the difficulties suggested by Dr. Hedley. Certainly with the large percentage of autopsies which Dr. Hedley has obtained, his results must be nearly enough correct to have demonstrated an error of enough magnitude to be important. What influence this will have on the mortality trend I cannot say. I am in accord with his suggestions for changes in the nomenclature of heart diseases. I feel that they should be allocated to the particular etiologic factor and that one should say "heart disease due to rheumatism" or "heart disease due to syphilis." There should be subheadings under the etiologic factor in each case. With this sort of diagnosis the knowledge of the frequency of the different types of heart disease would be definitely available.

DR. TIMOTHY LEARY, Boston: From the data collected the evidence that cholesterol is the cause of atherosclerosis is as definite as the evidence that the pneumococcus is the cause of lobar pneumonia. The average physician pictures arteriosclerosis from his memory of the aortic lesions. These lesions are so varied that a single agent would not be expected to cause them all. However, studies demonstrate that the diverse character of the lesions depends on more or less distinct reactions to cholesterol at different age periods. In the aortic lesions of the young, phagocytic cells pick up imbibed cholesterol esters in the aortic intima, modify them as the cells become amebic, split the lipoid into finer and finer droplets and cause it to disappear. This definite metabolism of cholesterol within lipoid cells is associated with a stimulation of the subintimal connective tissue. The growth of this tissue is limited, and with the rapid removal of the lipoid minimal scarring results. In the middle period of life this metabolism of the lipoid is slowed. The new connective tissue ages, secretes collagen and becomes scar tissue, so that scarring is the characteristic picture in this period. In the late period of life, cholesterol metabolism ceases and the lipoid cells tend to pile up without adequate supporting tissue and undergo nutritional necrosis with the formation of atheromatous "abscesses," which are typical of this period. The evidence that cholesterol is the cause of atherosclerosis is based not only on the studies of human lesions but on the experimental reproduction of the disease in rabbits. It is further supported by the results of unintentional human experimentation in the treatment of diabetes. During the decade 1920-1930 high fat diets, rich in substances containing cholesterol, e. g., butter, cream and eggs, were used in the treatment of diabetes. Shields Warren drew attention to the tremendous increase of arteriosclerosis in diabetic patients so treated. There was not only an increase in the disease in adults but x-ray shadows of calcified leg arteries were obtained in children as young as 4 years of age. During the more recent period, under low fats in diabetic diets adult arteriosclerosis has diminished, and roentgen evidence of the disease in children is no longer obtainable. Heredity and race may play a part in the etiology, stresses are important and the influence of endocrine factors may play a part, but inadequate cholesterol metabolism is the principal cause.

DR. S. ADOLPHUS KNOPF, New York: There have been many statistics as to the number of cardiac diseases and their treatment. I think, however, that too little attention has been paid to the prevention of heart disease and arteriosclerosis. More physicians fall victim to angina pectoris than any other group of men. Perhaps it is due to overwork and an irregular life in general, and all one can say in warning is that self preservation is as important as the care of others. For the prevention of attacks of angina pectoris and congestive heart conditions in general, total or partial thyroidectomy has been performed. This operation is considered dangerous by many. The ligation of both superior and inferior thyroid arteries has been resorted to with varying results. The latest in cardiac surgery is Lyon and Horgan's method, consisting in the "dissociation of the thyroid from the sympathetic nervous system and the reduction of the blood supply to the thyroid." I have no new medical measures for congestive heart disease and arteriosclerosis. Diaphragmatic respiration has been helpful in preventing attacks of angina pectoris, and if in addition the patient learns what he can or cannot do, he has a good chance of prolonging his life. Controlled diaphragmatic respiration is not only helpful in early tuberculosis, as it gives relative rest to the upper lobe, usually the first invaded, but is also beneficial

V 1
193

in arteriosclerosis, because it increases the oxygen supply and massages the heart and the aorta, thus preventing the thickening of the intima of the coronary arteries.

DR. SAMUEL FRIEDMAN, New York: Though the causes of arteriosclerosis are not definitely known, a larger proportion of people after 40 suffer from angina pectoris and high blood pressure than formerly. Neither the medical profession nor the government has yet planned anything definite for this great mass of sufferers, from whom I believe as much good could be accomplished as in typhoid and tuberculosis. Some people have low blood pressure and others have high blood pressure. In 1920 I reviewed the statistics of the health departments of New York, Philadelphia, Chicago and Cincinnati and found that the mortality rate from these diseases had increased about 100 per cent from 1900 to 1920. I felt that perhaps the two hours unwholesome travel to and from work daily, under the prevailing overcrowded conditions, added considerably to the wear and tear of the cardiovascular system. It occurred to me that a national five day (work) week would mend that damage by giving the people a two day rest. A word as to the prevailing abuses in the school and traction systems: Children who have just recovered from serious febrile diseases must on their return to school walk the stairs in line with the healthy ones several times a day during change of periods. This unquestionably may hurt many whose myocardium might still be affected though showing no murmurs. Those children should either use the elevator or be allowed to come a few minutes later to classes for about a month. The overcrowding of subway trains and climbing of subway stairs inevitably inflict serious damage on senile and diseased hearts. Many of these patients not only become winded but get attacks of angina. Occasionally one succumbs on reaching the street, having been pushed upward along the stairs. To overcome these two abuses, my idea would be that persons with active or potential heart disease should receive a medical certificate entitling them to a seat during the rush hours in a car designed for that purpose. Also, any subway lower than 20 feet should be provided with an escalator.

DR. HAROLD B. WOOD, Harrisburg, Pa.: Some of the inaccuracies in our heart statistics are due to the physicians themselves not understanding how to fill out death certificates, wrongfully omitting important causative conditions or improperly inserting extraneous diseases or incidental operations. Those of us who have the opportunity of instructing students or physicians in any way as to the proper method of recording causes of death should use this opportunity. If a physician writes "chronic heart disease" on the death certificate, with a ruptured gallbladder, acute alcoholism, influenza, bronchopneumonia or a cerebral hemorrhage, which are obvious causes of death, the cases become classified as deaths from heart disease, thereby giving incorrect death rates from heart disease. Physicians who write articles on heart disease and compare statistics of the present time with those of ten or twenty years back do not realize that the records are not at all comparable. During these years different systems of recording, coding and tabulating deaths have been adopted. Those who write to different cities for their records on any disease whatever, to compare one city with another, do not realize that the records are not comparable. Until recently Philadelphia, New York and Chicago used absolutely different methods of tabulating their causes of death by using different systems of coding when two or more causes were recorded on the death certificates. The action of federal and state authorities making inquiries of physicians for better information on death certificates was brought out in the last paper. Thousands of certificates are incomplete. The queries sent out obtain many corrections and better records. Thousands of death certificates are signed by practitioners of various sects and by other laymen. Should they be tabulated and accepted with the causes of death as determined by physicians? A few years ago the matter was brought up of the importance of tabulating only death certificates signed by physicians, but that system has not been put into practice as yet, as it should. These few points illustrate the absolute absurdity of using decimals in death rates.

DR. HOWARD B. SPRAGUE, Boston: I am glad that Dr. Emerson brought out the fact that there was a decrease in some of the tertiary manifestations in our part of the country and not necessarily in the infection itself. In this connection it is of interest to remember that it is now just twenty-five years since the original discovery of the arsenicals for the treatment of syphilis, and that is about the average time for the development of cardiovascular syphilis after the primary injection. It may be that we are at the beginning of a period of great decrease in these late manifestations of syphilis, as the result of improved methods of treatment.

DR. GEORGE E. FAHR, Minneapolis: Dr. Pardee put his finger on the crux of the situation in hypertensive heart disease. It is the evaluation of the two factors of increased work for the left ventricle and the decreased oxygen supply to the left ventricle consequent on the coronary arteriosclerosis. I don't think that one can say at this time which is the more important, but from an extended study of this subject I would say that it varies from case to case. In a man or a woman with a very high blood pressure and a very moderate amount of coronary arteriosclerosis, the important factor in heart failure will be the hypertension, and there are patients who have had a high blood pressure for many years. The roentgenogram first of all shows evidence through the dilatation of the left ventricle that there has been a hyperdynamic condition produced in the left ventricle musculature, consequent to the hypertension, and at autopsy in a few cases no arteriosclerosis of the coronaries is found. On the other hand, there are cases with moderately low blood pressure and a considerable degree of coronary narrowing, and the most important factor is the coronary narrowing with the consequent ischemia of the heart muscle, so I think that the two factors cannot be separated. They work to produce ultimately a heart failure in hypertension provided a patient doesn't die of uremia, cerebral accident or something else before that. Certainly when hypertension works alone the patients live on the average from ten to fourteen years before mild symptoms of dyspnea are produced in hypertension when there is no coronary disease present, and then they live longer because of careful handling of the case after the first symptoms, even after the first severe congestive failure, and then die of uremia, septicemia, apoplexy and so on. In one case the hypertension is the most important factor, in another the coronary arteriosclerosis.

DR. O. F. HEDLEY, Philadelphia: Dr. Emerson apparently misunderstood several of my statements. He stated that of 450 deaths considered due to heart disease 416 of them actually were, making a very small balance. Dr. Pardee in his discussion restated the matter correctly. Seventy-one, or 20 per cent, of 350 deaths reported as heart disease were found to be due to other conditions, while among 450 deaths due to heart disease only 279, or 62 per cent, were so recorded. These figures speak for themselves. The nomenclature sponsored by the American Heart Association is the best one at present. It or some other form of etiologic nomenclature is being widely used in clinics and hospitals throughout the United States. The etiologic diagnosis of heart disease is a fact and not a theory and must be reckoned with in computing vital statistics. While the Public Health Service has not seen fit to adopt the Standard Nomenclature of Disease for use in the marine hospitals, it is in the process of adopting an etiologic nomenclature. The recording of vital statistics is not a function of the Public Health Service. Dr. Pardee spoke of the desirability of having all rheumatic heart diseases grouped under rheumatic fever, the ultimate etiologic factor. I thoroughly agree with him but doubt whether it can be done without too greatly disturbing the International List of Causes of Death. It may be necessary to work out a plan by which heart disease can be tabulated and reported along etiologic lines and still conform to the International List. This could be used either in the United States as a whole or in cities or states as desired. Dr. Wood mentioned the desirability for improvement in death certificates. More time in medical schools should be devoted to teaching prospective physicians the correct method of certifying the causes of death. This should be included in the courses of preventive medicine. The average undergraduate course in preventive medicine devotes too much time to the mechanics of public health. This is an era of specialization, and about 95 per cent of physicians never encounter such problems in after years. All of them, however, sign death certificates.

105
935

THE CONTROL OF MYOPIA

EDWARD JACKSON, M.D.
DENVER

A paper read before this section in 1891 stated that [1] "the constant wearing of full correction lenses, no matter what their strength, with careful attention to other points of ocular hygiene, checks promptly and permanently the advance of myopia in the majority of cases." In 1892 in a paper on the full correction of myopia, read before the American Ophthalmological Society, I [2] asserted that "myopia should be fully corrected and the correcting lenses constantly worn, except at such times and to such extent as the emmetropic eye would require the aid of convex lenses for presbyopia." Supporting this, twenty-seven cases were reported that had been under observation three years or upward with this treatment. At the same meeting Dr. George C. Harlan [3] reported thirteen cases of high myopia, from 4 diopters upward, in which full correction had been worn constantly for more than five years, and stated that "excessive convergence without accommodation is the most important factor in progressive myopia."

Before that time Foerster [4] had published his observation that constant wearing of glasses, fully correcting, or overcorrecting the myopia, did not lead to increase of myopia, which he supported by the histories of fifty cases. Many observers had reported statistical studies of the eyes of infants and school children proving that myopia was very rarely present at birth but arose and was progressive during school life. These statistics for children were brought together and correlated by B. Alexander Randall in two papers, published in 1885 [5] and 1890; [6] and W. F. Norris [7] had stated that, in more than forty new-born children examined with the use of atropine, all the eyes were hyperopic.

The significance of the facts so accumulated was lost, however, in the attention given to theoretical explanations of myopia, although all admitted the truth of Donders' statement that "a myopic eye is a diseased eye." It was generally admitted that the refraction increased in the eyes of children, hyperopia grew less and myopia increased; but theoretical explanations claimed more attention than clinical facts. It was thought of as a step in evolution, when the theories of Darwin were poorly understood. It was attributed to some congenital defects, such as softness of the scleral tissues. Peculiar shapes of head and orbits, anomalous positions of attachment of the ocular muscles were suggested. With more reason astigmatism, newly discovered, was blamed for causing myopia.

The view of progressive myopia put forward by Dr. Harlan is still not understood by ophthalmologists. N. Bishop Harman of London, who has worked for thirty years for the establishment of myopia schools and sight-saving classes, is puzzled. He says: "It is very difficult to control the progress of even low degrees of myopia in some school children." He also suggests: "Stop all schooling and reading for at least a year, let the child run wild, preferably at the seaside." The whole subject of myopia needs to be considered in the light of actual experience of the results obtained by applying such suggestions to the prevention and limitation of myopia.

To this end 381 cases of myopia (755 eyes) seen in private practice, determined with cycloplegia and followed through periods of from two to thirty-nine years, an average of nine and one-half years, have been studied and tabulated. They include patients of all ages, from 4 to 82 years, and have been grouped and studied according to the age periods at which they came under observation and at which the constant wearing of the full correction was begun. Other ophthalmologists who have case records with good data can make similar studies of their own experience. When the eye begins to be myopic it is a diseased eye, and the results of such changes in it lead to grave disability and blindness in an important proportion of cases. The careful study of myopia is a step toward the prevention of the blindness of later life. It is not yet known to what extent blindness from cataract and retinal separation depend on myopia or how, through the general nutrition of the eyes, myopia and glaucoma may be related or opposed to each other.

Percentages in Age Groups

	Myopia Changes				Vision Changes			
Age	Increase	None	Decrease	No Change or Decrease	No Change or Increase	Increase	None	Decrease
Under 10	59	16	25	41%	99%	58	37	5
10 to 20	42	47	11	58%	91%	61	30	9
20 to 30	19	58	23	81%	93%	42	51	7
30 to 40	24	53	23	76%	87%	52	35	13
40 to 50	20	60	20	80%	75%	40	35	25
50 to 60	16	60	24	84%	75%	21	54	25
Over 60	23	45	32	77%	42%	14	28	58

The accompanying table shows that under 10 years of age the tendency toward myopia is general and that in most myopic eyes the defect is increasing. When one bears in mind the fact that at birth practically all eyes are hyperopic, it is safe to say that in all young children there is a tendency toward myopia. After the age of 20 this tendency has disappeared and the majority of myopic eyes show little or no increase. In later life, after 50, there is a tendency to decrease of myopia, although the cases of senile myopia, so-called second sight, balance the physiologic lessened hyperopia of childhood.

When case records are studied individually there appears to be strong reason for accepting the classification of anterior and posterior myopia that was adopted by Risley. The anterior myopias are the cases that have been classed as conical cornea, and slight dislocations and deformities of the lens. Anterior myopias are associated with high degrees of astigmatism. Two of these patients, followed from 7 to 15 and from 10 to 17 years of age, had bilateral, partial dislocation of the lens, and the myopia increased, although the high astigmatism did not increase. Nearly all the high anterior myopias appearing later in life, in patients from 16 to 48 years of age, were cases of corneal change, keratoconus.

Decreases in myopia did not occur before 10 years of age, but in some patients, placed that early on constant use of the full correction, decreases appeared before 20. From that time on, about one case of myopia in five showed increase until over 60, and after that about

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6. Randall, B. A.: Tr. Am. Ophth. Soc., 1890.
7. Norris, W. F.: Tr. Am. Ophth. Soc., 1885, p. 369.

one in three. Such decrease in the amount of myopia corresponds with the increase of hyperopia, found by Priestley Smith in his studies of the growth of the crystalline lens, between 25 and 65 years of age.

The increase of vision shown, not the better vision with correcting glasses but vision developing gradually as the glasses were constantly worn, was a matter of surprise. It began at the earliest age, and was found at all periods of life. In early life it might be ascribed to the gradual gain in visual acuity, commonly seen after the correction of astigmatism in young people. But after 30 it was best explained by the general improvement of the nutrition of the eye, with the wearing constantly of glasses that placed it on a footing of equality with the emmetropic eye or with the hyperopic eye not used excessively for near work.

The rather steady proportion, at all ages, of eyes that showed no change of visual acuity, as well as of those that showed no change of myopia, supports the idea of improved ocular nutrition under the conditions of using the eyes with the advantage of full corrections. The small proportion of eyes in which vision decreased, not more than one in four, even after middle life, should dispel the idea that nothing can be done to control myopia and preserve the usefulness of myopic eyes. Myopia can be controlled by removing its causes and securing the essential conditions for healthy eye work.

CAUSES OF MYOPIA

What are the causes of myopia? Certain congenital tendencies act under conditions unfavorable to ocular health. Under the influence of the work of Donders on the accommodation and refraction of the eye, the ophthalmologists of seventy years ago thought first of accommodation and astigmatism. Donders feared that accommodation had an important influence in causing myopia. Landolt based his rules for the care of myopia on that supposition. Graefe had pointed out that, when a young person with pulsating retinal veins fixed and focused vision on a near object, increased pulsation showed increased intra-ocular pressure. He arrived at the conclusion that the increased pressure was due to the accommodation of the eye.

Repetition of Graefe's experiment with the eye under observation with the ophthalmoscope subjected to complete cycloplegia by atropine, shows that the increased pulsation is not caused by accommodation but by convergence. Years ago the experiment was tried on an eye with oculomotor paralysis—complete ophthalmoplegia externa, but with good accommodation. The distinct venous pulse was not increased by the maximum exertion of the accommodation. There was not the slightest increase of the pulsation. It was only in later years that full understanding of the cause and mechanism of myopia was arrived at. Harlan was right. His view that myopia depends on excess of convergence has been confirmed. Decrease of convergence, even by wearing full correcting glasses, with increase of accommodation, controls myopia. And the same result may be secured by the use of prisms base in to diminish convergence.

ANTERIOR MYOPIA

Anterior myopia is caused by distention of the globe at the anterior pole. The center of the normal cornea is thinnest, the periphery has greater thickness, and the central and peripheral zones differ somewhat in structure.[8] The normal balance between the intra-ocular pressure and the sclerocorneal coat of the eye is usually maintained with great exactness. But sometimes, after general illness affecting tissue nutrition, the cornea gives way before the intra-ocular pressure, producing keratoconus and increasing the anteroposterior length of the eyeball. This process is checked by absolute avoidance of near work for the eyes, with complete correction of the myopia and astigmatism already present; and measures to restore normal metabolism. This should be conscientiously planned and persistently carried out, before any operative measure to change the shape of the cornea is considered.

POSTERIOR MYOPIA

Posterior myopia is what is commonly meant by "myopia." It includes "progressive myopia," "malignant myopia" and other groups of cases that are given special names. It has long been the subject for theories and academic discussions. Its causes, complications and sequels give it a major place in ophthalmic literature. But the distention that causes it does not begin, or center, at the posterior pole of the eye. Its pathologic changes begin, continue and are most extensive at the temporal side of the optic nerve entrance.

There are very few cases that do not show their chief lesions in this situation. The descriptions and illustrations of cases, and the sections of myopic eyeballs, all emphasize the fact. The myopic crescents, the myopic atrophies, have this location. The choroidal "halo atrophy" due to increased pressure of chronic glaucoma is entirely different in appearance and distribution. It appears equally advanced and equally broad all around the optic nerve entrance, with usually no pigment changes. The characteristic appearances of the myopic fundus are shown in all the atlases of ophthalmoscopy. Even where the picture is not intended to represent the fundus of a myopic eye, the crescent of myopia is sometimes noticeable. This illustrates that fundus changes may be started in eyes becoming less hyperopic, which do not go on to myopia.

CONVERGENCE

In most mammals the eyes are placed laterally, so that the two cannot be fixed on the same point. Binocular fixation, binocular vision, appears only in some of the cat tribe and in the primates. In the human embryo the primary optic vesicles start on opposite sides of the head but in the development of the eye are pushed around to the front, with the visual axes about parallel. In the human infant binocular vision is rudimentary at birth and is developing up to the sixth year, or later. The infant, looking at objects held in the hand close to the eyes, develops both binocular coordination and accommodation and probably diminishes the hyperopia that practically all eyes have at birth. The exercise of these new functions is quite intermittent. The infant looks at its hand and then away at something else—the typical exercise for growth.

Going to school, with set tasks requiring continued near looking, has a very different effect; physiologic hyperemia becomes pathologic. The educational process becomes dangerous in direct proportion to its scholastic efficiency. Risley [9] described the lesion produced as a "limited choroiditis of varying extent and intensity, affecting the region of the nerve entrance and generally manifested at the temporal margin of the optic disk as a crescent of altered color and pigment absorption." Norris [7] reported eleven cases and Risley seventeen

8. Salzmann: Anatomy and Histology of the Human Eyeball, translated by E. V. L. Brown, Chicago Medical Book Company, p. 26.

9. Risley: Tr. Am. Ophth. Soc. **2**: 363 and 368, 1888.

such cases that were watched for years, passing "from the hyperopic eyeball over into near sight, through the turnstile of astigmatism." Risley strongly emphasized the effect of astigmatism in producing such changes. Other factors are corneal opacities, poor lighting, a stooping posture and impaired general health, on which Batten [10] inclined to put all the blame for myopia. Perhaps the work of Norris and Risley failed to produce the impression it should, because they did not point out the enormous importance of the mechanical effects of excessive convergence.

Any one who turns in its socket the eye of a patient rendered unconscious and relaxed by general anesthesia will realize that the main obstacle to free movement of the eyeball is the rigid optic nerve, firmly attached to the sclera. This, much more than the check ligaments or the tonus of the extra-ocular muscles, limits the free movements of the eyeball. In convergence this resistance is constantly added to that of opposing muscles and other tissues. The forces meet all around the attachment of the optic nerve and its sheaths to the globe, around the optic nerve entrance. But the effects produced on the nasal and temporal sides are quite different. On the nasal side the tissues are jammed together by the turning in of the eyeball. On the temporal side the tissues are put on the stretch, and the choroid, with its vascular nutritive tissue, is pressed between the firm sclera and the outward pressure of the contents of the eyeball. These mechanical factors are quite sufficient to account for the pathologic changes in this region revealed by the ophthalmoscope and in the eyeball examined by the microscope after removal.[11] These changes are produced directly by excessive and too long continued convergence. They are not merely a symptom; they are the constant and essential lesion of myopia. They may be prevented by stopping and avoiding excessive convergence.

This has now been proved by sufficient clinical experience. Other theoretical explanations of myopia can be set aside until excessive convergence has been eliminated. Its elimination by constant use of correcting lenses and attention to posture puts the myopic patient on the direct road to safety. As myopia becomes high, above 6 diopters, the overstrain of convergence causes exophoria, which goes on toward divergent squint. This may require the assistance of prisms base in, or it may go on to divergent squint, and stopping convergence usually checks what has previously been a progressive myopia. The statistics recently published by Marlow [12] illustrate this.

This study of the effects of full correction shows that even for bad cases of progressive myopia the prognosis is not hopeless. The weakening, atrophic process does not extend forward to the anterior segment of the sclera. The illustration, which Sir John Parsons [13] credits to Heine, representing a section of the normal eye laid on a section of a highly myopic eye shows this. The anterior sclera reinforced by the insertions of the rectus muscles, their connecting bands, the ciliary ring, the doubled capsule of Tenon, seem never to suffer from the stretching, thinning process of high myopia; although the anterior sclera does give way, in rupture, or staphyloma, in other pathologic conditions. The same is true of the temporal part of the posterior sclera, which is supported by the tendons of insertion of the oblique muscles and the bands of scleral tissue that receive their stress. The unknown "tendency to scleral softening," which has been assumed to be the basis of scleral distention, is narrowed down to the region to the temporal side of the optic nerve entrance, especially subject to convergent stress.

The more remote pathologic sequels that have been associated with myopia, cataract and detachment of the retina are not necessarily results of myopia, and probably ignorance of the pathologic relation between them and myopia exaggerates its importance. Cataract is sometimes associated with other forms of choroidal disease, and its association with myopia may have no peculiar significance. The recent evidence of shrinking and detachment of the vitreous, before detachment of the retina, which has been emphasized by Lindner, may be a more direct result of the pathologic sequence of myopia. But in any case the indefinite danger of such sequels is a sound reason for stopping the development of myopia in its early stages. The dangers may have been exaggerated, but they exist. The teaching of toleration and indifference toward beginning low myopia needs to be sharply reversed. The evidence of the tendency to myopia and its beginnings should be sought at the start of school life, and the check of full correction by lenses and posture, the breaking up of habits of excessive convergence, is one of the most important applications of school hygiene.

Myopia is not a subject for theoretical speculation and hypotheses; it is a possible danger to be met, prevented, and eliminated from the life of the growing child. Its cause was long a mystery. The suggestion of the mathematician Keppler that near seeing caused myopia was buried under two centuries of speculation and academic discussion. The authority of Graefe directed attention away from convergence to accommodation. Pathologists searching with compound microscopes could not recognize a mechanical factor in causation. Cohn's statistics showed myopia increasing from 1.4 per cent in the lowest school grades to 59.5 per cent in the theological graduate school of the university. Risley found that the proportion mounted year by year in the schools of Philadelphia, and Derby, using atropine, proved that it increased from 35 to 47 per cent of the class in four years at Amherst College. These are now confirmed by extended clinical experience. The matter is worthy of attention.

Republic Building.

10. Batten: Ophth. Rev. **11**: 1, 1892.
11. Parsons, J. H.: Diseases of the Eye, New York, Macmillan Company, p. 486.
12. Marlow, F. W.: Muscle Imbalance in Myopia, Arch. Ophth. **13**: 584-597 (April) 1935.
13. Parsons, J. H.: Pathology of the Eye, New York, Putnam's Sons, vol. 3, p. 915.

ABSTRACT OF DISCUSSION

DR. ALBERT C. SNELL, Rochester, N. Y.: Since myopia is very common, it is natural that some ophthalmologists question the efficacy of any or of all modern efforts to control it. Dr. Jackson's present dictum that "myopia can be controlled by removing its causes and securing the essential conditions for healthy eye work" is encouraging. From the statistics which I have studied the general deduction is made that the number of myopic cases in public schools today is not diminishing but that the degree of myopia in the present school generation is much less than that of previous decades. Dr. Jackson's paper presents several surprises. The first is his deduction that after the age of 20 one patient in five showed a decrease in myopia, and the second is the large percentage of myopia patients showing an improvement in visual acuity. In a review of 1,100 cases of myopia I found that only 2 per cent showed a decrease in myopia up to 30 years of age, and 4 per cent showed a decrease after 30. My studies of myopia do not reveal the large percentage of cases with improvement in visual acuity shown in Dr. Jackson's table.

In the same records considered previously I found about 6 per cent with improvement in visual acuity, in contrast with the 40 to 61 per cent shown in Dr. Jackson's table. About 50 per cent of myopia seems to be developmental, self limited and but little influenced by the use or nonuse of glasses. In this class the myopia is of low degree and becomes stationary before the age of 25. In contrast with this class and at the other extreme are found the progressive or malignant myopias. With regard to the latter and the intermediate class of myopias, I agree with Dr. Jackson that the combination of the constant use of full correcting lenses, restriction of visual tasks and attention to proper general and ocular hygiene has produced favorable results in their control.

DR. F. T. TOOKE, Montreal: "Control" is the holding in check of a pathologic process or possibly the elimination of elements that may predispose toward the creation of causative factors. One speaks of the control of tuberculosis, scurvy and rickets through adopting ways of living which prevent their genesis. Is it not equally true of myopia that its control consists in adopting rules of life that inhibit the creating of the prodromal causative factors? In myopia one is not merely dealing with a refractive error. Donders has truly said that every myopic eye is a diseased eye and that such an eye is as much a cripple actually as the lesion in a hip joint. Both can be controlled, but both might have been prevented. Relatively low errors of myopia may be associated with retinal detachments, lens changes, vitreous opacities and a host of other pathologic changes that hold up progressive myopia as one of the commoner contributing factors in the loss of sight. The healthy offspring of a myopic parent is prone to inherit myopia much more so than the child of hypermetropic parents, and the greater the degree of myopia in the parent the greater the likelihood. No one can challenge that heredity is a predisposing factor. I have only to refer to such authorities as Pflüger, Schneller and Tschering. With the new-born child introduced into the world without an actual physical handicap other than a predisposition, should not our debt to society compel us to adopt more rational methods for the education and upbringing of our children? One has only to regard the figures taken from the upper grades in school statistics to note the inroads that have been made by myopia. So many children, often defective physically and handicapped by a foreordained heredity, should not be encouraged in the intensive application of near vision. Are there not too many highly educated people today and would not many do better if they were told at the outset that a life demanding close application was unsuitable for them? One cannot transfer all one's myopia subjects to the mid-Atlantic where convergence is reduced to a minimum; but there is a happy medium. The establishment of sight-saving classes is a step in the right direction, but a great deal of instruction can be given by the ear rather than by the eye. The facility of using artificial light at all hours of the day and night encourages a precocious child to indulge in perverted practices that ultimately assume a psychology almost pathologic in character in its unwillingness to indulge in moderation or restraint.

DR. S. W. NEWMAYER, Philadelphia: In a recent survey, a CWA project in Philadelphia, 16,200 high school boys and girls were studied for their eye status. An amount of myopia sufficient to reduce vision to 15/50 or less was found in 425 boys and girls. Of these, twenty-seven had more than 6 diopters of myopia, and 398 had less than 6 diopters. In the sight-saving classes of Philadelphia, 190 pupils are enrolled; sixty-seven have been placed because they possess excessive myopia, but only three of these have a vision of 20/100 or less. Cases of myopia in sight-saving classes show little or no progression, and rarely any decrease in vision. This I believe is due in part to maintaining a full correction of the defect.

DR. MEYER WIENER, St. Louis: I think that certain statements made by Dr. Jackson, which he states as facts, should not go unchallenged. He states that fifty years or more ago authors proved that myopia was produced by the use of the eyes for close work. I admit that many authors fifty years ago did maintain, and many down to the present time have maintained, that such is the case. I do not admit that this has been proved. Dr. Jackson also states that myopia is produced by excessive convergence. I take exception to that statement. I don't think it is proved. I think that there are many things which can controvert that opinion. In the first place, it is taken for granted that, because myopia increases during the grammar and high school age, it is the use of the eyes for close work that produces or increases it. The fact must not be lost sight of that this is the period of greatest growth and that during this period, whether the eyes are used for close work or not, if there is a tendency for the production of myopia or the increase of myopia it will occur whether the children are going to school or are not using their eyes at all. There is one thing that to my mind is unanswerable. Why is it that if the use of the eyes for close work in school is the cause of myopia after one reaches the university it ceases to increase and it doesn't increase? It increases to the greatest extent during the period of greatest growth, between the ages of about 9 or 10, and 17 and 18 or 19, and after that there is but little increase whether one uses the eyes or not, and I think that statistics show this. Why is it that most domestic animals are myopic? They certainly are not using their eyes for close work, and they certainly are not using the power of convergence. Wild animals are not myopic. If convergence produces myopia and produces it in the school age, why doesn't it continue to increase after the school period is finished? If convergence produces myopia, why is it that persons with one eye can develop myopia? Why is it that persons who have no binocular single vision develop myopia and have myopia increase?

DR. JOSEPH I. PASCAL, New York: There is a type of myopia found in children which is of low amount and progresses slowly. It shows no pathologic fundus changes, and corrected vision is at all stages perfectly normal. This type of myopia seems to be due not to a stretching of the sclera but to a hypertonicity of the whole neuromuscular mechanism of the accommodation. It may be called for this reason tonic myopia. It is in a sense a permanent tonic spasm, though it can hardly be termed a true spasm. It is more nearly a state beyond the tonic spasm, as the latter is a state beyond the clonic spasm. The cause of this type of myopia seems to be a primary exophoria. In these cases there is a fairly high degree of exophoria, more at distance, a true divergence excess. The exophoria seems to be the primary condition and is due to a relatively higher tonicity of the divergence center. It is well established now that there is an active divergence center just as there is an active convergence center and that the balance of the eyes is determined by the relative tonicity of the two opposing centers. Exophoria, therefore, is not just a passive state resulting from over-relaxation of the convergence center but is an active state due to a relative overtonicity of the divergence center. Now, this primary exophoria necessitates a continuously excessive convergence effort in order to obtain binocular fixation. And because of the association between the accommodation and convergence, the excessive convergence tends to produce excessive accommodation, resulting in a permanently hypertonic accommodative mechanism and resultant myopia. Not all children showing a primary exophoria develop myopia. The principal reason for this is that there is a variable intensity in the association of the two functions of accommodation and convergence. When the two functions are tightly bound, the overactivity of the convergence will tend to produce tonic myopia. When the two functions are but loosely bound, the desire to have clear as well as single vision will prevent the development of this type of myopia. A similar explanation, though in the reverse direction, has been mentioned by Dr. Maddox in explaining why some hyperopic children develop convergent strabismus and other hyperopic children do not. Considering the etiology of this type of myopia, one method of control suggests itself. An effort must be made to dissociate the two functions of accommodation and convergence. By means of simple stereoscopic exercises, it is possible to loosen the bond between the accommodation and convergence. And this procedure seems indicated in this type of myopia in addition to other measures used in the case.

105
935

DR. WALTER B. LANCASTER, Boston: The subject is obviously one of many sides and the solution is not simple, because myopia is due to a number of causes acting together. One man will emphasize one cause, and another will emphasize another. The causes may be grouped into two classes: the local causes in the eye and the causes that depend on hereditary and general hygienic health conditions. It is important to urge the parents and nurse to guide the habits of the child and to teach him the proper method of holding the book, especially of holding the book farther away. However, in a family in which myopia is hereditary one child grows up myopic, and then the next one comes along and he also develops myopia. So one wants something more to do. Many have tried Dr. Wiener's method of epinephrine. Some have tried Dr. Luedde's method of atropine in one eye. I am not sure whether he has published a report on that, but he has tried it for some years. It is based on the belief that convergence is to be combated. It seems to me that convergence is an important factor. What can be done to diminish it? Using atropine in one eye may in some cases suffice to favor suffusion and do away with binocular vision and allow the eye to diverge instead of converge, but, if suppression with divergence is a good thing to produce, why not go a step further and use not only atropine in one eye but also cover it with the crinkly glass that is now available and so much less conspicuous than a ground glass or a black glass before one eye and yet effectively cuts down the vision? I have been using this method. It will take a long time to determine its value, so I am asking that some ophthalmologists try it. Perhaps five or ten years from now some one will have some more data.

DR. EDWARD JACKSON, Denver: The discussion has shown that the problems of myopia may be approached from very different points of view. It is a large subject and it requires such studies as Dr. Snell has made and as Dr. Tooke has made and suggested, and all the others. They will have to be brought together and coordinated before any general conception of the whole subject is possible. The matter of heredity has not been doubted at all. Immediately there arises in my mind a family in which the father and mother and the four children were myopic. This would probably have occurred even if they had been started to school with glasses, or if glasses had been put on before they went to school. A former theory, which was frequently put forward before much was understood about the process of evolution, was that myopia was a preparation of the race for the use of the eyes for close work. I think that the statistics will show that perhaps 999 out of 1,000, or perhaps only 99 out of 100, are born hyperopic. The size of the eyeball, its length, the curves of the refracting surfaces all indicate that those eyes must be expected to be hyperopic and that they are more highly hyperopic than the eyes ordinarily encountered at school age. The vision of children certainly is not complete at birth, or within a year or two afterward. But early they begin to be interested in objects that they can seize in the hands and bring as close as they please to the eye; in that way they get a large enough image to see, even if they do not have very good vision. Practically all children come to school age with the habit of looking at near objects too close to their eyes for complete accommodation and with more convergence than they ought to have after they get to working in school. Every year I see some children having trouble with their eyes who on examination are found simply to be holding the print too close to their eyes. The only way to meet this situation and control it is to test the child repeatedly with very fine figures by bringing the card closer and closer to the eye until the child begins to back off; that is, give it a lesson that it is easier for the eye to see things farther away. Then if the mother is taught that she must watch the child with reference to this, one will get rid of the excessive convergence of infancy. It is new to me that the domestic animals are found to be nearsighted. They have deficiency of vision and they lack the full foveal vision that human beings have. Generally the lower animals have hyperopia. They may occasionally have myopia. The statistics with reference to savage races show that they are nearly all hyperopic. I think that Dr. Randall's statement has never been controverted that hyperopia cannot be "healthfully outgrown." The myopic eye is diseased when it becomes myopic.

CHOLECYSTIC DISEASE

A COMPARISON OF THE CLINICAL WITH THE CHOLECYSTOGRAPHIC DATA CONCERNING 500 PATIENTS NOT OPERATED ON

B. R. KIRKLIN, M.D.
AND
THOMAS W. BLAKE, M.D.
Fellow in Radiology, the Mayo Foundation
ROCHESTER, MINN.

The reliability of cholecystographic data when subjected to the test of operation and pathologic examination has been proved repeatedly. For example, of 4,676 patients examined by cholecystography in 1932 at the Mayo Clinic, 732 were operated on, and the cholecystographic report, whether positive or negative, was confirmed in 696 (95 per cent) of the cases. Among 287 patients whose cholecystograms were normal and who were operated on chiefly for diseases other than of the gallbladder, surgical exploration confirmed the cholecystographic diagnosis in 257 (89.5 per cent). Of 445 patients concerning whom cholecystographic data were positive, 439 (98.6 per cent) had disease of the biliary tract. Comparable statistics have been reported by many other roentgenologists, so that the trustworthiness of the method, so far as proof by operation goes, is well established and generally accepted.

Occasionally, however, the question as to patients not operated on is raised; the implication is that, as only those patients who give marked symptoms of disease of the biliary tract ordinarily are subjected to operation, the percentage of correct cholecystographic diagnoses may easily be high, but that, if all patients regardless of severity of symptoms were operated on, the record of cholecystography might be less brilliant. Those who raise the question are not disposed to doubt cholecystographic evidence of gallstones or tumors, even in the absence of symptoms, but intimate that in other instances cholecystography is perhaps merely a procedure of confirmation and not of independent diagnosis, that often the cholecystographic data are not in consonance with the clinical facts, and that mere impairment of function of the gallbladder, as shown by cholecystography, is not of itself significant of disease of the biliary tract.

With respect to such intimations, the concession must be made that cholecystography is primarily a test of function of the gallbladder at the time of examination, and that it is a direct method of diagnosis only when gallstones, calcific deposits in the bile or in the walls of the gallbladder, tumors or deformities of the gallbladder are demonstrable. It will also be admitted frankly that the roentgenologist cannot determine absolutely whether impaired function alone, as indicated by absence or faintness of the dye shadow, is attributable to disease of the biliary tract, to disease of other organs directly or reflexly affecting the ability of the gallbladder to receive and concentrate dye, or to conditions unrelated to disease. Notwithstanding these considerations, since thousands of operations have proved that disordered function usually is a result of disease of the biliary tract, as a rule it is far safer to draw this inference than to assume that the cholecystographic indications of impaired function are probably attributable to other causes.

From the Section on Roentgenology, the Mayo Clinic.
Read before the Section on Radiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

Doubts as to the constant significance of cholecystographic indications of disordered function of the gallbladder may arise from lack of confidence that the technic of examination and the rationale of interpretation have been sufficiently perfected, or from a supposition that the normal gallbladder may be erratic in the performance of its functions, or from the hypothesis that its functions are often materially altered by diseases or abnormal states of other organs.

Again and again, roentgenologists have emphasized the necessity of employing a scrupulous technic in administering the dye and in the roentgenographic procedure, regardless of the method employed, whether oral or intravenous. With either method the dose must be adequate, purgatives and other medicines that might interfere with the test must be interdicted, and food must not be taken by the patient except as ordered. For several years the relative merits of the two methods were in debate, but this has ceased, since experience has shown that the oral method is just as dependable as the intravenous method if certain well known principles are respected. At the Mayo Clinic it is insisted that the dye be given in solution, which is required to be made palatable by the addition of grape juice and which is directed to be taken immediately after a full meal almost devoid of fats.[1] If such, or similar, precautions are not followed, early vomiting, defective absorption of the dye, or delayed entrance of the dye-laden bile into the gallbladder may result in absence or faintness of the shadow when the viscus is normal. Unless the roentgenographic technic is correct, the shadow of the gallbladder may be obliterated by movement or overhard rays, or the organ may not be included in the region exposed. If the shadow is not dense, it may be concealed by gas or fecal material in the bowel. Extraordinary caution must be used in adjudging a shadow to be faint, for under normal conditions the density is affected by numerous variable factors and a standard cannot be established. Unless the shadow is so delicate that it can scarcely be discerned and its borders can be traced only with difficulty, it should be considered normal. Always it should be judged by its best appearance in the successive films, not by its worst appearance. But the qualified roentgenologist is aware of these and of many other pitfalls, and only the inexperienced examiner is likely to be entrapped by them.

If there is a lingering suspicion that the normal gallbladder sometimes behaves eccentrically because of unexplainable inhibitions, substantial grounds for such mistrust are hard to find. Certainly when the technic of cholecystography is without flaw, the gallbladders of normal persons almost invariably respond normally to the test, and in the apparent exceptions the roentgenologist usually assumes that he, not the test, has erred.

At one time some roentgenologists were confident that various diseases of other organs might interfere with the ability of the gallbladder to receive and concentrate bile. Listed among them were duodenal ulcer, diabetes, exophthalmic goiter, pernicious anemia, cancer or ulcer of the stomach, low basal metabolism and obesity. Duodenal ulcer, diabetes and exophthalmic goiter were at first regarded as especially likely to impair the validity of the cholecystographic test, but with further investigation it appeared that they were far less common causes of deception than had been supposed. An incomplete canvass of our own cases indicated that the incidence of cholecystographic evidence of impaired function, or of other disease of the biliary tract among patients who also suffered from any of the diseases or conditions mentioned, was even lower than such incidence among all patients examined, except perhaps in cases of diabetes and obesity, and possibly in cases of pernicious anemia and exophthalmic goiter. Further, when patients who had any of these concurrent diseases had been operated on, the conditions found had agreed closely with the cholecystographic data. However, because patients having these disorders are seldom sent for operation on the gallbladder unless there are marked symptoms of disease of the biliary tract, in which event such disease is likely to be found, conclusive proof as to the influence of concurrent disorders on the function of the gallbladder is lacking, and as those named have been under suspicion, whether justly or unjustly, it is entirely proper for the clinician to take account of their potential effect in any case. A lesion causing marked pyloric or duodenal stenosis may retard evacuation of the dye, thus delaying absorption of the compound by the bowel and hence delaying its appearance in the gallbladder beyond the time of examination, but in such a case it is improbable that the clinician will fail to surmise the presence of obstruction or neglect to make appropriate investigation. Congenital absence and transposition of the gallbladder are such rare sources of error that they require only passing mention. Carcinoma of the pancreas may mechanically obstruct the common duct, but this is among the rarer diseases.

Impairment of hepatic function by disease of the liver, such as carcinoma or cirrhosis, would seem theoretically to be an effective cause of error in cholecystography. But Graham, Cole, Copher and Moore [2] have pointed out that normal cholecystograms have been found in the presence of retention of dye as high as 50 or 60 per cent in the blood stream thirty minutes after injection. However, they considered it reasonable to suppose that, if damage to the liver became sufficiently extensive, the amount of dye passing through would be inadequate for the production of a shadow by concentration in the gallbladder. It may be that roentgenologists have been inclined to underestimate the effect of hepatic damage on the cholecystogram, but their experience and the results of experimentation indicate that this effect can easily be overestimated.

On the whole, notwithstanding the many possible causes of absence or faintness of the shadow of the gallbladder, other than disease of the biliary tract, the percentage of errors from these sources, as proved by operation, has not been large, and it is to be doubted that the percentage in cases in which operation has not been performed would be materially larger.

Obviously, the reliability of cholecystographic data relative to patients whose symptoms do not warrant surgical intervention cannot be determined with finality except by subjecting a large number of such patients to cholecystectomy, and that is unthinkable. Even the most critical comparison of clinical with cholecystographic observations relative to patients not operated on cannot be decisive, for there are wide variances in the individual experience of clinicians, in their skill in eliciting the anamnesis and physical observations, in their degree of care in recording data, in the extent to

1. Kirklin, B. R.: Persisting Errors in the Technic of Oral Cholecystography: A Procedure Designed to Avoid Them, J. A. M. A. **101**: 2103-2104 (Dec. 30) 1933.

2. Graham, E. A.; Cole, W. H.; Copher, G. H., and Moore, Sherwood: Diseases of the Gallbladder and Bile Ducts, ed. 2, Philadelphia, Lea & Febiger, 1928, pp. 393-396.

which they are influenced by the cholecystographic report, and in the particular factors they deem necessary for the diagnosis of disease of the biliary tract; and a similar, although less pronounced, variance in the interpretation of cholecystographic phenomena obtains among roentgenologists. Nevertheless, such comparison is the sole available method of approach, and we have attempted to make an analysis of this sort.

The material comprised the records of 500 patients examined both clinically and cholecystographically at the clinic but not operated on. In 200 of the cases no shadow of dye had been discernible, and a report of nonfunctioning gallbladder had been made; in 100 the shadow of dye had been only faintly discernible, and a report of poorly functioning gallbladder had been made; in 200 the cholecystographic response had been normal and had been so reported.

The records were not selected, but those of each group were taken consecutively as they appeared in the files of the Section on Roentgenology. Those patients who had nonfunctioning, or poorly functioning, gallbladders were examined in 1933 and 1934, and those who responded normally to the test were examined in the final weeks of 1934. Clinical examinations had been made by consultants and their assistants in the various sections of the clinic, and in most cases more than one consultant had seen the patient and had participated in the diagnosis. Cholecystographic examinations had been made after oral administration of the dye, according to a rigid technic described heretofore, and interpretations had been made alternately by four consultants in the Section on Roentgenology.

In 185 (92.5 per cent) of the 200 cases in which there were nonfunctioning gallbladders, according to the cholecystograms, a clinical diagnosis of cholecystic disease was made. Among the fifteen exceptions, a questionable diagnosis of cholecystic disease was made in one instance, the cholecystographic report of nonfunctioning gallbladder was recorded without comment in two, and disease of the biliary tract was not mentioned in twelve. Further, among these twelve a diagnosis of cirrhosis of the liver was made in eight and a low basal metabolic rate was emphasized in one. On the other hand, among the 185, diabetes was also diagnosed in three, cirrhosis of the liver in two, pernicious anemia in two, hyperthyroidism in two, duodenal ulcer in five, and a low basal metabolic rate was given special note in two.

In eighty-one (81 per cent) of the 100 cases in which there were poorly functioning gallbladders, a clinical diagnosis of cholecystic disease was made. Among the nineteen exceptions were one case in which one of the consultants held the opinion that the gallbladder was at fault and should be removed, five in which there were various degrees of doubt as to the presence of cholecystitis, three in which the cholecystographic report was cited without comment, and ten in which disease of the biliary tract was not mentioned. Moreover, among the nineteen cases excepted, a diagnosis of duodenal ulcer was made in one and a low basal metabolic rate was emphasized in one. However, among the eighty-one cases in which disease of the biliary tract was considered to be present, diabetes was also diagnosed in three, hyperthyroidism in three, duodenal ulcer in six, and cirrhosis of the liver in one.

In 188 (94 per cent) of 200 cases in which there were normally functioning gallbladders, disease of the biliary tract was not mentioned by the clinician in the record. Among the twelve exceptions, the clinician made a definite diagnosis of cholecystic disease in three cases and noted the possibility that such disease might be present in nine. Again, among the exceptions the additional diagnosis of duodenal ulcer was given in one instance and of pernicious anemia in one. But among the 188 cases in which it was considered that disease of the biliary tract was not present, duodenal ulcer was diagnosed in twenty-four, diabetes in two, cirrhosis of the liver in one and pernicious anemia in one, and the low basal metabolic rate was stressed in four.

Thus the results of this study do not confirm any mistrust that the test of function by cholecystography, as a basis for judgment whether the gallbladder is probably diseased or normal, is less reliable in cases in which operation is not performed than in cases in which it is performed. On the contrary, in 90.8 per cent of these 500 cases the cholecystographic report was in consonance with the final clinical opinion, and this closely approximates the accuracy of cholecystography as proved by operation.

But, if this percentage is fairly representative, it is to be hoped that no one will hastily conclude that cholecystography is superfluous and that the symptoms and signs, together with the results of other tests, are consistently sufficient for the diagnosis or exclusion of disease of the biliary tract. Surely, quite aside from its revelation of gallstones and tumors, cholecystography must have considerable value, both in direct and in differential diagnosis, else it would not be employed as freely as it is. In this appraisal of cholecystography there is no subtle suggestion that the clinical examination can be discarded or that the two methods are competitive. Roentgenologists have always insisted that the cholecystographic data should invariably be weighed in the light of the clinical facts. When the respective conditions found are inconsistent, it is the acknowledged privilege and duty of the clinician to consider whether technical or interpretive errors may have been made, or whether disease elsewhere may have affected the functional behavior of the gallbladder, or whether, in spite of a normal cholecystogram, the biliary tract may nevertheless be diseased. Further, however valid the cholecystographic signs of impaired function may be as indications of disease of the biliary tract, they will not determine whether the disorder is transient or chronic, mild or severe, or whether it is the cause of the patient's chief complaint, and determination of these matters rests solely with the clinician. In short, the roentgenologist and the clinician are obliged to cooperate, and neither will profit from entertaining captious doubts as to the efficiency of the other's method.

ABSTRACT OF DISCUSSION

DR. I. S. RAVDIN, Philadelphia: Any laboratory examination that can be proved correct in its interpretation in 95 per cent of instances needs no further justification. It should be admitted, however, that in its universal application by roentgenologists the results of cholecystography are not nearly so good. The excellent results reported in the paper are due to the great care in the administration of the dye and in the roentgenographic procedure, factors that were stressed by Graham and Cole when the method was first described. The suggestion that even faint shadows be considered an indication of normal function is not in accord with known facts in regard to gallbladder function. Studies of the gallbladder bile in gallbladder disease in a large number of patients have conclusively demonstrated that all degrees of concentration may take place. A faintly visualized gallbladder may be due to the failure of the gallbladder to concentrate the dye adequately, and such a gall-

bladder is in no sense normal in its function. The varied terminology now being used by roentgenologists for reporting the results of cholecystographic study should be discouraged and an attempt should be made to develop a standard nomenclature for reporting the results of study. The authors have exercised such caution in the determination of the status of what may well be called borderline cases that no possible exception can be taken to their statements. It is in this group that full cooperation between the roentgenologist and the clinician is necessary. I hope that before long some one will publish the cholecystographic data from a group of noncalculous cases in which gallbladders have been removed partly as a result of the cholecystographic evidence and compare the results of roentgen study with the end results of operation. It is my impression that in this group, regardless of the cholecystographic evidence, the end results of operation are not good.

DR. B. R. KIRKLIN, Rochester, Minn.: Did I understand, Dr. Ravdin, that that was the recognition of the stones in all the gallbladder cases or stones in a certain group?

DR. I. S. RAVDIN, Philadelphia: That was a consecutive series of 165 cases. The stones were frequently present as positive shadows when the concentration of shadow was below 5 per cent. It gave no information as to where the stones might be visualized.

EXPERIENCES IN LEG LENGTHENING

E. C. JANES, M.B. (TOR.)
HAMILTON, ONT.

The subject of leg lengthening is of vital importance to those patients who are unfortunate enough to have a short extremity. They must wear an unsightly and heavy lift of some sort, or they must be content to walk with an awkward gait and bear with what fortitude they have the compensatory deformities that inevitably develop. If a lift is not worn to equalize the length of the legs, the pelvis is constantly tilted, and a scoliosis develops, which may seriously handicap the patient. A lift as well as being unsightly, means extra weight on an already weakened extremity.

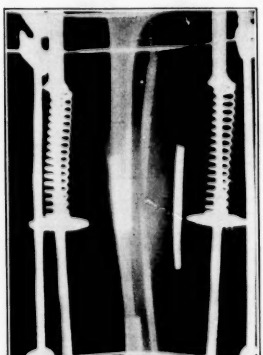

Fig. 1 (case 1).—Appearance after lengthening was complete but with the apparatus still in position.

What doctor has not had patients ask if anything can be done to correct the shortening of an extremity? What doctor has not felt at least a little guilty because of the patients' disappointment if the answer is in the negative? It is necessary and just that all those interested in orthopedic surgery make themselves familiar with the best methods of correcting inequality in the length of legs and be prepared to offer their patients the benefits thereof.

From the McGregor Clinic.
Read before the Section on Orthopedic Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

Codivilla [1] and Putti [2] showed that lengthening was a practical procedure—that it must be done gradually, and that skeletal traction and countertraction should be used. They proved that it was the fascial structures of an extremity that provided the greatest resistance to lengthening and that blood vessels and nerves would tolerate considerable gradual extension.

It remained for Abbott [3] to devise an apparatus and a surgical technic that was practical. Abbott should get full credit for giving this work the necessary stimulus on this continent. He described a form of osteotomy that left considerable bone surface in contact when lengthening was complete, and he devised an apparatus to maintain accurate alinement as well as extension. Various modifications of his technic and apparatus have been reported, but the fundamentals are not changed and might be listed as follows:

Fig. 2 (case 1).—Five and one-half years after operation, showing very little evidence that any operation has been performed on the tibia.

1. Skeletal traction and counteraction.
2. Slow and gradual lengthening.
3. A form of osteotomy that leaves considerable bone surface in contact when lengthening has been completed.
4. Wide division of fascia.
5. Some form of stabilizer to maintain accurate alinement of fragments.
6. Rigid surgical technic.
7. Postponing of stabilizing operations until lengthening has been completed.

The purpose in this presentation is to stimulate interest in the subject and to report a few cases in which leg lengthening has been performed. The cases chosen illustrate shortening due to various causes and several difficulties that may be encountered. From these experiences one may form an opinion as to what types of cases are suitable for leg lengthening and also what might be considered the ideal case for this procedure. Details of technic and apparatus will not be described, because space does not permit. A modified Abbott machine was used in all cases.

REPORT OF CASES

CASE 1.—D. K., aged 15 years, had infantile paralysis at 18 months of age, followed by extensive paralysis of the left leg including the quadriceps. The patient walked with the aid of crutches and a long leg brace until the age of 14 years.

In November 1928 triple arthrodesis was done, with fixation of the achilles tendon and transplantation of the semimembranosus tendon to the patella.

In May 1929 lengthening of the left tibia of 2¾ inches was obtained. The leg was supported in a plaster cast for six months. The patient now walks well without any appliance, and the legs are equal in length.

1. Codivilla, A.: On the Means of Lengthening, in the Lower Limbs, the Muscles and Tissues Which Are Shortened Through Deformity, Am. J. Orthop. Surg. **2**: 353 (April) 1905.
2. Putti, Vittorio: The Operative Lengthening of the Femur, J. A. M. A. **77**: 934 (Sept. 17) 1921.
3. Abbott, L. C.: The Operative Lengthening of the Tibia and Fibula, J. Bone & Joint Surg. **9**: 128-152 (Jan.) 1927.

Case 2.—K. D., a girl, aged 15 years, had atrophy of the right leg due to infantile paralysis. The right leg was 2 inches shorter than the left.

In July 1932 lengthening of the right tibia of 2¼ inches was obtained. The leg was supported in a plaster cast for six months. Moderate infection developed but cleared up without trouble. At present she walks well. Her legs are equal in length.

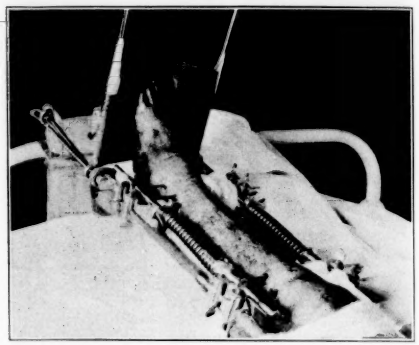

Fig. 3 (case 1).—Apparatus in position.

Case 3.—J. I., aged 21, had 1½ inch shortening of the right leg, as the result of malunion of a fracture of the right femur five years before.

In October 1932 lengthening of the right tibia of 1½ inches was obtained. The leg was supported in a plaster cast for about seven months, but the patient was able to return to work in four months. Moderate infection developed, necessitating the curetting of a sinus from the tibia in December 1933, after which the infection cleared rapidly.

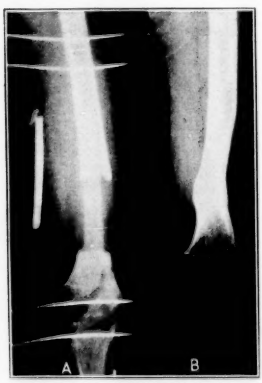

Fig. 4 (case 4).—Condition: *A*, in April 1930; *B*, in May 1935.

Case 4.—E. W., a girl, aged 18 years, had most of the soft tissues of the left leg torn away in an accident at 4 years of age. When she was 10 years old the left knee was resected to correct a flexion deformity of the knee, and both epiphyseal lines were removed.

When I first saw her in 1930 she had a bony ankylosis of the left knee in about a 20 degree flexion. A thin scar surrounded the leg from the knee to 4 inches above the ankle. She was wearing a lift 8½ inches high under the left foot.

In January 1930 a Helferichs osteotomy was performed to allow straightening of the knee without loss of length.

In March 1930 lengthening of the left femur of 3 inches was obtained. Altogether, after operation the left foot was 5½ inches closer to the floor, 3 inches by lengthening the femur and 2½ inches by osteotomy of the knee, and she now requires a 2-inch lift built into her shoe to walk comfortably.

One and a half years after the lengthening she fractured the left femur through the same area in which the lengthening had been done, but union took place in the usual length of time. There was mild infection about the lower end of the upper fragment after lengthening.

Case 5.—W. K., a youth, aged 17, had 4 inch shortening of the left leg, due to healed tuberculous arthritis of the left hip joint.

In October 1932 lengthening of the left tibia of 2 inches was obtained. Bony union in the upper part of the tibia was delayed, and about six months after operation a fracture occurred through this area. Healing still did not take place, so a bone graft was placed across the fracture in September 1933. Healing then progressed rapidly. At present he walks quite well with about a 1½ inch lift inside the left shoe.

COMMENT

The average lengthening obtained was approximately 2¼ inches. Troublesome infection occurred in three cases but no serious osteomyelitis developed. Although fairly satisfactory results were obtained even in these cases, one feels that more lengthening might have been obtained if infection had not been present. This was particularly true in cases 4 and 5. Safe bony union was slow in all the cases. It was necessary to keep the leg supported for at least six months, and about eighteen months in case 5, in which a bone graft was required. There was some trouble because of tilting of the fragments during lengthening in two cases, and the apparatus is now provided with a stabilizer to correct this defect. The results are gratifying to the patients in spite of the discomforts and dangers, and all of them feel that the time was well spent. The entire period is not necessarily wasted, because further rehabilitation is possible during convalescence. Two of these patients took courses in shorthand and stenography during their treatment and have subsequently found remunerative positions.

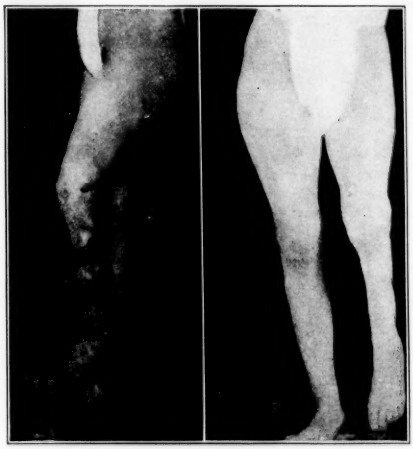

Fig. 5 (case 4).—Shortening in January 1930.

In these cases the operation was performed for shortening due to (1) infantile paralysis, (2) healed tuberculosis of the hip joint, (3) malunion of fracture and (4) growth disturbance due to destruction of the epiphyseal lines.

One hesitates to be dogmatic about the amount of shortening necessary to justify operation, but I feel that

it should never be done for less than 1½ inches. Each case, of course, should be individualized, and the psychologic effect of a short extremity and an unsightly lift on both the patient and a prospective employer must never be forgotten.

If the shortening is due to infantile paralysis, and the patient is able to walk without a brace—perhaps after various stabilizing operations — leg lengthening should be done; but if the quadriceps is paralyzed and cannot be replaced, a long leg brace is usually necessary, and lengthening would appear to be too formidable for the benefit to be obtained. The ideal type of case would be one in which the extremity is normal except for its length. This condition is most closely approximated when shortening is due to malunion of a fracture or to healed tuberculous arthritis of a hip joint.

Apparently the blood vessels and nerves will allow the extension necessary, provided they are stretched very slowly. If lengthening is too rapid, the foot may show temporarily a little coldness and numbness.

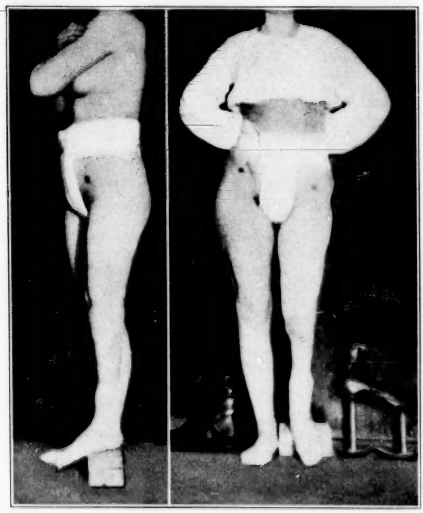

Fig. 6 (case 4).—Appearance in May 1935, with the cumbersome apparatus worn before lengthening and the shoe worn at present.

The operation must not be undertaken lightly. It should be done only in a hospital, where rigid surgical technic and adequate after-care can be obtained. The surgeon should have some mechanical inclination and sufficient training in major bone surgery.

Patients who undergo the operation should be prepared to give up about six months. The ideal time in the patient's life is at 15 or 16 years of age, when growth is nearly complete but before the wage earning period. There is no reason, however, why the operation cannot be performed at practically any age.

The entire process is a formidable one, but, judging from my own experience and the reported experience of others, it is a quite justifiable procedure and should be added to the armamentarium of all those who undertake the surgery of cripples.

250 Main Street East.

ABSTRACT OF DISCUSSION

DR. PAUL N. JEPSON, Philadelphia: My comment on Dr. Janes's procedure is one of caution. The operation, with its pitfalls and objections, was first clearly discussed by Dr. Abbott several years ago. There are several avenues open to infection. The one important objection to the operation is that the bone marrow is widely opened. Some irritation is caused by the introduction of the pins or wires, and these bony openings are the avenues by which infection may enter. The procedure in competent hands works well, but the wounds must be watched carefully and must be carefully dressed. It has been suggested that a series of simple, single-step osteotomies be done in place of this procedure. Such an operation has been done by means of a long slanting osteotomy, notching for the required length and prying the bones into place. Only a limited amount of leg lengthening can be obtained, namely, three-fourths inch, and according to the amount of shortening present the procedure may require several operations, which in itself is a definite objection. For this reason, unless the conditions under which it is performed are adequate, the operation ought not to be undertaken. To me it is a formidable procedure. The cases presented by Dr. Janes are remarkably good ones.

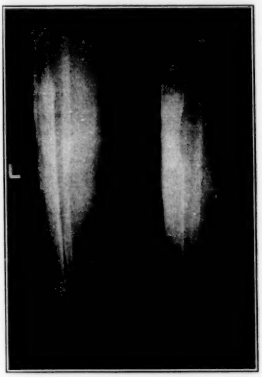

Fig. 7 (case 5).—Condition in March 1933, showing a weak bridge of bone supporting the leg, and in November 1933, showing the fracture of the bone graft in place.

DR. JAMES A. DICKSON, Cleveland: Most excellent and satisfactory results can be obtained in bone lengthening operations by means of the Abbott technic and its modifications. It is a formidable surgical procedure, and each case must be given serious consideration before the operation is undertaken. The patient requires long hospitalization and careful supervision for from six months to a year, and sometimes even longer; hence the economic as well as the surgical difficulties must be considered thoroughly. In well chosen cases the final result more than compensates for these difficulties. As Dr. Janes has pointed out, this operation should not be considered unless the shortening amounts to 1½ inches or more. When there is a flail extremity and the patient is going to have to wear a brace anyway, the lengthening operation should not be considered. When there is a weakness of the gluteus medius and the patient has to walk by deviating the spine to the opposite side in order to bring the leg forward, at least 1½ inches of shortening is required to enable the patient to

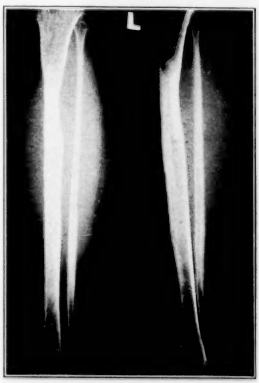

Fig. 8 (case 5).—Well healed and strong tibia in May 1935.

walk with an optimal gait. It is advisable, therefore, to experiment with various heights of lift on the shoe in every case of poliomyelitis in order to determine which height gives the best walking gait. In this way the optimal degree of lengthening can be determined before operation. In view of the fact that in spite of all precautions a certain degree of valgus deformity may result during the lengthening procedure, it would probably be better to perform the lengthening operation first, and attend to stabilizing procedures later. Probably the most dramatic results in leg lengthening are obtained when the shortening is caused by something other than poliomyelitis, such as tuberculosis of the hip or knee. In the healed tuberculosis of the hip Dr. Janes did a lengthening of the tibia rather than of the femur. Successful lengthening of the femur can be accomplished by weights alone, with the line of pull in the axis of the upper fragment of the femur. In tuberculosis of the knee, when the roentgenogram shows that the shortening is due to a fusion of the tibial or femoral epiphysis, the legs may be equalized by the Phemister operation for fusion of the same epiphysis on the well leg. The type of operation to be used in equalizing the length of the extremities in this type of case should be chosen also according to the structural type of the individual.

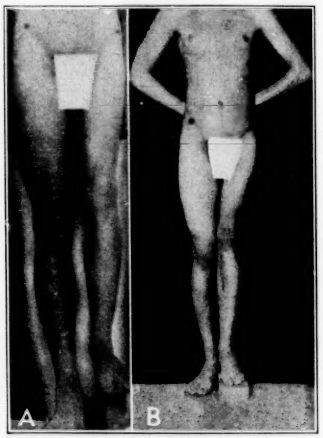

Fig. 9 (case 5).—Appearance: *A*, before and *B*, after the lengthening.

DR. GEORGE ANOPOL, New York: My purpose is to bring out a more simplified method in holding the fragments in line and during their traction, making the patient more comfortable during his stay in the hospital, and eliminating any trauma to the operated site in case of any emergency or moving the patient from the bed to the chair. Most of the other appliances require the patient to be kept in bed. The method I use consists of two isometric parts. Each consists of two telescoped tubes, the inner one being graduated, and two posts, one at the upper and one at the lower end, with the traction so arranged that, when they are pushed apart, the distance between them is reported by the calibration on the inner tubes. This eliminates roentgenography with pieces of metal and then calculating the distance obtained. The apparatus is combined with plaster-of-paris technic.

DR. E. C. JANES, Hamilton, Ont.: I quite agree that the warning about a little caution regarding this operation is timely. Still, any one doing surgery of cripples should be prepared to take a fair amount of responsibility. It must be remembered that these children will at times be willing to undergo a great deal of risk and discomfort to have their deformities corrected. I have not been much impressed by the danger of shock from the operation itself in my cases. The trouble is liable to come later on when lengthening has been started. There has really been very little shock from the actual application of the apparatus. Dr. Anopol has shown some modifications of technic and apparatus that should prove interesting.

Clinical Notes, Suggestions and New Instruments

PARAFFIN FOREIGN BODY IN THE BLADDER

PERRY KATZEN, M.D., BROOKLYN

Foreign bodies in the urinary bladder are by no means uncommon, all varieties of objects having been described in the literature. Such articles composed of wax, however, seem to be of comparatively rare occurrence. The following case is reported as an instance of the nonoperative removal of such a foreign body:

REPORT OF CASE

F. S., an unmarried white man, aged 21 years, consulted me Nov. 3, 1934, giving the following history: Three days previously, while at a house party, he and several companions became intoxicated, and as a practical joke his "friends" inserted into his urethra a paraffin candle measuring approximately 2½ inches in length and one-fourth inch in diameter. The patient stated that he immediately felt the candle slip into his bladder. Twelve hours later there developed frequency of urination, dysuria, tenesmus and terminal hematuria. At the time of examination he was voiding every thirty minutes with severe pain; during the preceding twenty-four hours he had noticed that the urine was quite cloudy and bloody. The previous history was irrelevant; there was no history of venereal disease.

Physical examination was negative except for tenderness on palpation over the suprapubic region. The temperature and pulse were normal. The urine was grossly bloody, and on analysis the reaction was alkaline, the specific gravity was 1.016, there was a trace of albumin, there was no dextrose, many pus cells and red blood cells were present, and there were many gram-negative bacilli having the morphology of B. coli.

On roentgenologic examination of the urinary tract, both kidneys appeared normal in size, shape and position. There was no radiographic evidence of calculus or foreign body.

Cystoscopy revealed intense inflammation of the entire bladder mucosa, and scattered throughout were many hemorrhages. Floating near the vault was a white paraffin candle of a size corresponding to that described by the patient. It was divided into three segments attached to one another by the wick, but apart from that its form had not been altered as a result of its three-day stay in the bladder, the wax not appearing softened and the spiral design of the candle being well preserved. Several attempts were made to grasp the candle with a cystoscopic forceps, but the candle repeatedly slipped away as the jaws of the forceps closed down on it, and further efforts at removal were abandoned at that sitting. Methenamine and ammonium chloride were prescribed.

The patient was seen again the following day; his symptoms were unchanged and the urine was still bloody. A Young's cystoscopic rongeur was introduced into the bladder; the cystoscopic appearance was the same as noted the previous day. With considerable difficulty, owing to the elusiveness of the floating wax, several pieces of the candle were removed with the rongeur, but with each bite of the latter numerous small fragments of the candle were broken off and remained in the bladder, so that at the end of the procedure probably half of the original amount of paraffin could still be seen floating near the bladder vault. A portion of the wick also remained, attached to several pieces of wax.

To effect the removal of the remaining wax it was decided to employ liquid petrolatum as a solvent, as first suggested by Harris.[1] Accordingly, 100 cc. of warm, sterile liquid petrolatum was instilled into the bladder through a rubber catheter

1. Harris, Augustus: A Case of Paraffin Foreign Body in the Bladder, M. J. & Record **134**: 372 (Oct. 21) 1931.

and the suprapubic region was massaged thoroughly. The patient was instructed to refrain from urinating as long as possible and to massage over the bladder at intervals.

The following day he felt better; the frequency and dysuria had diminished, although gross hematuria was still present. The bladder was irrigated with 1:5,000 mercuric oxycyanide solution and 100 cc. of warm, sterile liquid petrolatum was again instilled, followed by massage over the bladder region. The same treatment was instituted the next day. On each occasion the patient was able to retain the oil for from two to three hours without any evident bladder irritation.

The patient was reexamined two days later, at which time he stated that there was considerable lessening of the urinary distress and that he now noticed only occasional slight hematuria. On cystoscopy there was still evident a severe hemorrhagic cystitis, but it was less marked than previously. Neither wax nor wick was visible, the latter having apparently been passed unnoticed by the patient.

During the following month the bladder was irrigated twice a week with 1:4,000 solution of acriflavine base, accompanied by a gradual clearing of the urine. The patient was last examined Dec. 8, 1934. On that date he was entirely free from symptoms, the urine was crystal clear, and cystoscopy revealed a normal bladder mucosa.

COMMENT

Paraffin acts as a marked irritant to the bladder mucosa, provoking a violent hemorrhagic cystitis within twenty-four hours. Occasionally it may serve as a nucleus in the formation of a vesical calculus. The prompt removal of such a foreign body is therefore clearly indicated.

In most cases it should not be necessary to employ cystotomy for this purpose. At times one may succeed with the use of the cystoscopic forceps, Young's rongeur, or the cystoscopic lithotrite, but there is great difficulty if not complete failure in such procedures. The wax constantly slips away from the jaws of the instrument and floats high in the bladder. If the wax finally is grasped, it crushes very readily into many fragments on account of its friable nature, making repeated instrumentation necessary. In a severely inflamed, irritable bladder which bleeds easily, this procedure is far from desirable.

Various methods of dissolving wax in the bladder have been employed. Heat alone, applied by means of bladder irrigations as hot as could be tolerated, was used by Boss[2] with only partial success in a patient with a candle in the bladder. After twenty-two days of treatment several pieces of wax were still present.

Lohnstein[3] in 1907 was the first to describe the use of chemical solvents. A patient with a stearin candle in the bladder was given an instillation of 15 cc. of benzene and retained it for forty-five minutes. This was immediately repeated with 25 cc., which the patient could retain for only ten minutes. The same treatment was instituted the following day. Although this was effective in dissolving the wax, there ensued symptoms of benzene poisoning as well as considerable vesical irritation. Weisz[4] also employed benzene, but he first injected 120 cc. of water into the bladder, so that the trigon, which was the part most severely inflamed in his patient, would not come in contact with the benzene, since the latter floated on the water.

A number of other solvents have been used. Caples,[5] after three unsuccessful attempts at removal with the cystoscopic rongeur of a paraffin candle lodged in the vesical neck, dissolved this foreign body by bladder instillations of 33⅓ per cent gasoline in liquid petrolatum at 110 F., giving seven such injections over a period of three days. The same solvent was effectively used by Melen[6] in a bladder containing a wax drawing-crayon, using six instillations. Hottinger,[7] in a boy with a mass of beeswax in the bladder, was able to remove part of the wax through the operating cystoscope and dissolved the remainder with xylene, injecting water into the bladder first and following with 12 cc. of xylene, which was retained for four hours. Xylene was also employed successfully by Geyer,[8] who used 50 cc. and repeated this instillation five days later.

The use of liquid petrolatum, described by Harris, impressed me with its effectiveness and freedom from irritation. Harris injected 100 cc. of warm liquid petrolatum into a boy's bladder which contained part of a paraffin candle. This was followed by massage over the bladder and the application of external heat by means of hot sitz baths and a hot water bag held over the suprapubic region. Four such instillations were given twenty-four hours apart, each being retained for three or four hours. Most of the wax was dissolved after two injections; the wick was passed spontaneously after the second instillation. Several days after the last treatment cystoscopy revealed only a few patches of mild cystitis, with no evidence of foreign body.

CONCLUSIONS

1. The removal of paraffin from the bladder should not require cystotomy or operative cystoscopic procedures.

2. Liquid petrolatum is an effective, nonirritating solvent for such foreign bodies. In the case of paraffin candles, if the wick is not voided spontaneously, it may easily be removed with the cystoscopic forceps.

855 Ocean Avenue.

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A CASE OF AUTHENTICATED FERTILITY IN A MAN, AGED 94

FRANCES I. SEYMOUR, M.D., NEW YORK; CHARLES DUFFY, M.D., NEW BERN, N. C., AND ALFRED KOERNER, M.D., NEW YORK

The patient here studied was born on a farm in North Carolina in the year 1840. His entire boyhood was spent in the usual pursuits of a farm boy, until at the outbreak of the war between the states he joined the Confederate troops. After some time in the army he was put into a grinding mill, which turned out flour for the soldiers. The end of the war found that he had not been in any battles. The war over, he returned to farming. In 1872 he married. His wife lived until ten years ago, bearing him sixteen children, of whom six are living and well, the oldest being 63 and the youngest 33. Evidence that the stock was good is further supported by the fact that there are thirty-eight grandchildren. Approximately a year ago our subject remarried, this time pledging himself to a widow of 27. A few weeks ago a child was born of this union, the father at this time being a little over 94 years old.

He has always been a man of outdoor habits. Except for an occasional cold and pneumonia eighteen years ago, he has been singularly free from illness. He has had no operations, accidents or hospitalization of any sort. He chews tobacco but does not smoke. Until a few years ago he drank considerable alcohol. On both his father's and mother's side, long life has been the rule, his mother dying at the age of 103. There has been a total freedom from familial involvement in any chronic diseases.

The general appearance of the patient is senile. He has a markedly wrinkled skin, brownish in cast, leathery in texture, and having a considerable number of comedones. The angle of the jaw is distinctly of the senile type. On both eyes there are pterygia, the left being incipient. Arcus senilis is present, and there are early cataracts on both eyes. The fundi present an interesting picture. The light reflex is considerably increased, the arteries appearing silver-wire and the veins being somewhat ampullated. The pupils react to light, though somewhat sluggishly. They are round and equal and respond to accommodation. There is no evidence of hippus, no deviation, no divergence, no enophthalmos and no exophthalmos. The ear drum is lusterless and opaque. A tonsillar tag is present on the left side. Most of the teeth are missing and there are several which are represented by roots only. Those which the patient retains are in poor condition.

Read before the Craven Medical Society of North Carolina at New Bern, March 12, 1935.

The subject is pigeon chested and has a slight kyphosis. His height is 5 feet 8 inches (173 cm.) and his weight is 165 pounds (75 Kg.). The heart is enlarged about the width of three fingerbreadths to the left and two fingerbreadths downward. The rate and rhythm are regular; there are no murmurs, and there is no dyspnea on exertion. The lungs present no evidence of pathologic changes. The radial arteries are pipe-stem in character. The pulse is regular, there being no variation in pressure and no arrhythmia.

The abdomen presents a rather surprising amount of good musculature, and there is no evidence of any herniation. The prostate is not enlarged. The extremities are not remarkable.

In general, the muscles of the body are well developed, firm, and in a good state of preservation. The cranial nerves were tested in detail, peppermint, energine (a cleaning fluid) and ether being (among other things) the substances used in the sensory determination.

The first seven cranial nerves were normal both on sensory and on motor tests. The bone conduction was greater than the air conduction; phonation was good and the oculocardiac reflex was negative. The eleventh nerve showed no abnormality. The movement of the tongue was more pronounced to the right than to the left side. Its papillae were accentuated.

The patient's gait was normal. There were no tremors present. Coordination, both equilibratory, including the Romberg phenomenon, and nonequilibratory, was entirely normal. There was no evidence of aphasia, either motor or sensory. The diffuse tactile sense was hyperesthetic. The reaction to pain was hypesthetic, muscle sense being hyperesthetic, while both temperature and vibration were normal. Mentally the patient was entirely normal, his general behavior and cooperation being excellent; his emotional state was euphoric, and his orientation, memory, intelligence and judgment were very good.

Examination of the blood showed hemoglobin 85 per cent, white cells 6,500 and red cells 4,900,000. The blood clotting time was three and one-half minutes. The blood sugar was 115 mg. per hundred cubic centimeters and a negative Wassermann reaction and gonorrhea fixation test were offered in further examination of the blood. A differential count of the white cells showed 44 per cent polymorphonucleocytes, 14 per cent large lymphocytes, 21 per cent small lymphocytes, 5 per cent monocytes, 3 per cent basophils, 2 per cent eosinophils and 11 per cent stab cells. The red cells showed some poikilocytosis, some variation in size and considerable achromia (about 30 per cent). The platelets appeared normal in number. The urine showed a specific gravity of 1.020; it was the color of light amber; its reaction was neutral; sugar and albumin were absent. Microscopic examination revealed a few amorphous crystals, an occasional epithelial cell, no casts, no red blood cells, and no pus. The specimen contained several cylindroid strands.

The seminal fluid was entirely within average limits in appearance, color and viscosity. The spermatozoa were of the average size; only 65 per cent of the customary number were present. Their conformation was entirely normal, and their motility was very great.

COMMENT

We have presented here a man of 94, the first instance within our knowledge in which fertility has been definitely and affirmatively checked up medically. We are confronted by an individual showing evidences of fine preservation coexistent with signs of advancing age, in whom the element of fertility seems practically unaffected. We have shown that in a case in which fertility is retained until very late in life, as here, the appearance of the sperm is indistinguishable from that of a young individual in the virile state. On the basis of the physical examination it is rather difficult to understand why a certain function of the body should be spared from the inroads of advancing age beyond those seen in the vast preponderance of human beings. This record tends to throw doubt on the doctrine sometimes advanced that hard work is inconsistent with fertility. It also may be considered to question the occurrence of and constancy of the menopause in the male.

To what benign influence this happy state is attributable must remain the subject of conjecture. Whether heredity, outdoor habits of life, particularly suitable tissue structure, or a mental state that finds itself in peculiar harmony with nature, or whether any combination of the elements is intriguing speculation, to which, however, at present no definite answer can be given.

It is of the greatest interest in such cases to endeavor to isolate the element to which fecundity may be definitely ascribed so that it may be supplied in those cases in which a premature absence occurs. Whether such a substance is hormonic in nature, whether it is species specific, type specific or entirely individual is as yet not known. It does, however, seem that the familial tendencies of the individual and the soil on which the seed is planted are important factors that exhibit a certain amount of constancy on which dependence can be placed.

53 East Ninety-Sixth Street.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

THE PHYSICAL CHARACTERISTICS OF DIATHERMY AND SHORT WAVE DIATHERMY MACHINES

ALLAN HEMINGWAY, PH.D.
AND
K. W. STENSTROM, PH.D.
Assistant Professor of Physiologic Chemistry and Professor of Biophysics, Respectively, University of Minnesota
MINNEAPOLIS

An electric current produces heat when it passes through tissues, and this action has for a number of years been utilized by physicians for treatments of certain conditions. The apparatus used is referred to as the diathermy machine. The most important feature of this machine is that it delivers a high frequency current. This is the only type of electric current which can safely be passed through the body at high enough intensity to raise the temperature appreciably. Diathermy could not be developed until physics had advanced enough to make such currents available.

A method of producing high frequency currents to generate electromagnetic waves was discovered by Hertz in 1887. A few years later, in 1893, d'Arsonval discovered that a high frequency alternating current in passing through animal tissues would not stimulate the neuromuscular system to cause an electrical shock but would produce heat in the tissues. During the next few years apparatus was developed for the purpose of generating high frequency alternating current to heat the tissues for therapeutic purposes. The clinical use of diathermy at first developed gradually but became quite popular during the years 1905 to 1910. During the years 1910 to 1920 diathermy was enthusiastically used and favorable reports were numerous for many forms of disease. Since 1920 the use of diathermy has been subject to a more critical examination clinically, physiologically and physically, with the result that its characteristics, contraindications, dosages and uses are well known.

At the present time two types of diathermy machines are used to produce high frequency electric current which will pass through the tissues producing heat but no neuromuscular stimulation. These two types of machines will be referred to in this paper as the spark gap diathermy machine and the vacuum tube diathermy machine.

TYPES OF DIATHERMY MACHINES

The Spark Gap Diathermy Machine.—This has been used for the past forty years. It is this type of machine which was first used by d'Arsonval and the earlier workers. During the operation of the machine, when a nonstimulating electrical current is being generated, there is electrical sparking at specially constructed spark gaps built within the machine. The electrical current that is produced by the machine and that passes through the patient oscillates back and forth in the electrical circuit which contains the patient. The oscillation of the current is very rapid, one oscillation lasting about one millionth of a second. The inability of this current to cause electrical stimulation is due to its rapid oscillation. The spark gap diathermy machine does not deliver to the patient a current that is continually oscillating. The current oscillates for a short time and then ceases. The oscillating period is followed by a pause during which no current flows. This in turn is followed by an interval in which an oscillating current again flows. This process of oscillation current—pause, oscillation current, pause—is repeated indefinitely until the switch is turned "off." The electric current is sent through the patient as a series of pulses separated by intervals in which no current flows. Each pulse consists of a train of oscillations. At the beginning of each train the current is high but during the oscillation interval the current decreases, each successive oscillation decreasing in magnitude until the oscillations cease as the magnitude becomes zero, when the pause between oscillation trains commences. With spark gap diathermy there would be several hundred to several thousand trains of oscillations and the same number of pauses per second. The curves in figure 6 are drawings made from oscillograms of actual diathermy currents. The curves show how the voltage, or the electromotive force which drives the current, varies during the passage of a diathermy current. The current varies in a manner similar to the voltage.

The majority of spark gap diathermy machines, but not all, produce an oscillating current which has a frequency of some value between one-half million and 2 million cycles per second. In using diathermy current of this frequency it is necessary to apply the electrodes tightly against the skin. This is necessary to insure good electrical contact. If the electrode fits loosely, sparking is likely to occur, causing a burn.

The Vacuum Tube Diathermy Machine.—This has been developed into a practical therapeutic unit during the last ten years. The early machines of a decade ago were not practical, owing to the high cost of vacuum tubes and the short life of the tubes. During recent years vacuum tubes have been much improved mechanically and electrically, with considerable reduction in cost. At present the manufacture of these machines is increasing, but whether they are superior to spark gap machines for therapeutic purposes is a question.[1]

The nonstimulating current delivered by these machines is a current that is oscillating continually. The stream of electrical charges, in the electrical circuit which contains the patient, moves back and forth at a regular rate. There are no pauses between trains of oscillations as in spark gap diathermy. The type of current is similar to the alternating current used for lighting purposes except that it oscillates from 10,000 to 100,000 times faster than the lighting current.

Vacuum tube diathermy machines are of two different types, differing in the frequency of the diathermy current that they generate. One type of machine generates alternating current in the range usually covered by the spark gap machine, namely from one-half to two million cycles per second. This type of machine is generally used for surgical purposes. Another type is the so-called short wave diathermy machine. This machine generates diathermy current of a much higher oscillation frequency, the frequency range extending from 10 million to 100 million cycles per second.

Diathermy machines, while producing a nonstimulating diathermy current, also radiate energy in the form of electromagnetic radiation in a manner similar to a radio transmitting set in a radio station. The wavelength of the radiation depends on the frequency of the diathermy current. If the frequency is 10 million cycles per second, the wavelength of the electromagnetic radiation is 30 meters. If the oscillation frequency has

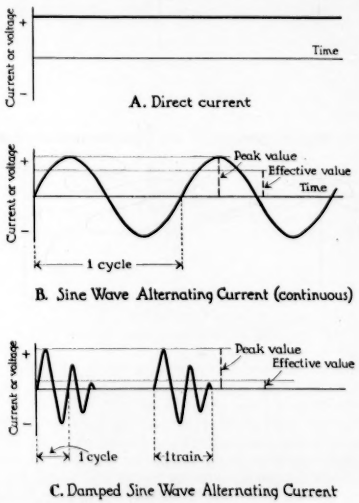

Fig. 1.—Oscillographic tracings of a direct current, a continuous sine wave alternating current, and a damped sine wave alternating current.

a high value of 100 million oscillations per second, the wavelength of the radiant energy is 3 meters. As a consequence of this inverse relation between oscillation frequency of the electrical current and wavelength of the radiant energy the term "wavelength" is quite frequently used in place of "frequency." The exact relation is: oscillation frequency (cycles per second) × wavelength (meters) = 300,000,000. The diathermy current from vacuum tube machines, which has a frequency of from 10 million to 100 million cycles per second, can be delivered to the patient in an unusual manner. This consists in placing the diathermy electrodes not in actual contact with the skin but at some distance from the skin surface. An air space of from one-half to 2 inches separates the metallic electrode and the skin. Used in this way a metallic electrode can be covered with an insulator and still be effective. On starting the diathermy machine the diathermy current passes from one electrode, across the air gap to the

1. Mortimer, Bernard, and Osborne, S. L.: Tissue Heating by Short Wave Diathermy: Some Biologic Observations, J. A. M. A. **104**: 1413-1419 (April 20) 1935.

105
935

patient and then across the other air gap to the other electrode. The diathermy current is concentrated in the region between the electrodes. This method of applying the diathermy electrodes should prove valuable in treatment of regions of the body in which the surface is very irregular with bony projections and where it is difficult to apply an electrode by actual contact. It is then advisable to have the space between the electrode and the skin filled with a substance of about the same

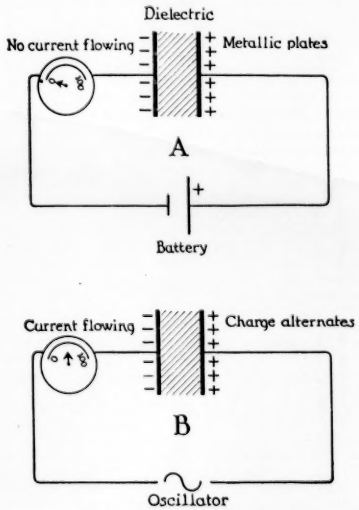

Fig. 2.—Typical condenser circuits.

dielectric constant as the tissues (e. g., distilled water in a rubber bag with thin walls) in order to prevent overheating of these projections.

Another method of administering heat by diathermy is to surround the region to be heated by a coil of wire through which a high frequency current is passing. The high frequency current in the coil generates local "eddy currents" within the tissue. It is these localized currents which produce heat.

In choosing a machine of the vacuum tube type for diathermy treatments by electrodes not in actual contact with the skin it is necessary to have the machine conform to a certain standard if it is to be of value. The first requirement is that the machine must be able to deliver to the patient sufficient energy. Unfortunately, some machines are now being manufactured that are deficient in this energy requirement. It is necessary to deliver heat energy to the patient to raise the temperature of the tissues treated. These low power machines do not generate the required amount of heat. A second requirement is that the frequency of these machines for this noncontact method of placing the electrodes must be greater than 10 million cycles per second; otherwise this method of applying the electrodes cannot be used.

PROPERTIES OF ELECTRIC CURRENTS

Before a more detailed description of diathermy apparatus is given, a few technical terms that are commonly used will be defined.

A direct current (abbreviated D. C.) consists of a flow of electrical charges through a conductor in one direction only. Such a current is delivered from a battery or a direct current generator (fig. 1 *A*).

An alternating current (abbreviated A. C.) consists of a flow of electrical charges through a conductor in such a manner that the electrical charges oscillate back and forth in the electrical circuit. The number of oscillations (cycles) per second is called the frequency. This type of current is usually supplied for illumination and for electrical power devices. It is the type of current generated by the vacuum tube diathermy machine. Essentially, the vacuum tube diathermy machine changes sixty cycle alternating current, which causes electrical stimulation, to fifty million cycle current, which does not stimulate (fig. 1 *B*).

The spark gap diathermy machine delivers damped alternating current. The current through the patient oscillates back and forth, each oscillation becoming smaller and smaller, until the current ceases. After a brief pause the whole process is repeated. The decrease in amplitude of each oscillation is called damping (fig. 1 *C*).

The force that drives electrical charges through a circuit is the electromotive force and is measured in volts. The electric current, which measures the number of charges flowing through a circuit per second, is measured in amperes. The ratio of volts divided by amperes is the electrical resistance and is measured in ohms. It is a measure of the resistance encountered by the flowing electrical charges. A physiologic analogy would be the action of the heart, in which the driving force would be the mean aortic pressure, the current the minute volume of the heart, and the resistance that of the arterioles, capillaries and venules.

The voltage that drives the alternating current undergoes a cyclic variation from a high positive value through zero to a high negative value. The highest value reached is the peak voltage. The effective voltage continually exerted, however, is not the peak voltage, just as the systolic pressure is not the effective pressure of the blood flow. The effective driving voltage is called the effective voltage or "root mean square" voltage and would correspond to the mean aortic pressure in the analogous blood flow. The analogy must not be carried too far, since the alternating current voltage is both positive and negative, while aortic pressure, although it fluctuates, is always positive.

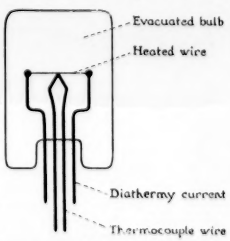

Fig. 3.—Construction of vacuum thermocouple used to measure high frequency currents and effective voltages.

An electrical condenser consists of two metallic plates, which are good conductors of electricity, separated by a medium called the dielectric. The circuit of figure 2 represents a condenser in an electrical circuit containing a meter that measures current when it flows and a battery that can supply a direct current. When the connections are made a current will flow for a very short interval of time until electrical charges accumulate on the plates of the condenser. Once the charge has accumulated, the flow of current will cease. If the battery is replaced by an oscillator or a generator of alternating current,

a current will oscillate back and forth in the circuit. Electrical charges will flow into the condenser and then out again as the current reverses. This back and forth movement of the electrical charges into and out of the condenser forms the electric current. A condenser possesses capacity, which is measured in farads or microfarads. The larger the area of the condenser plates and the closer they are together, the greater will be the capacity. The capacity depends on the mechanical dimensions of the condenser. A condenser will block the flow of direct current but will permit the flow of alternating current. A condenser used in this way is called a "blocking condenser."

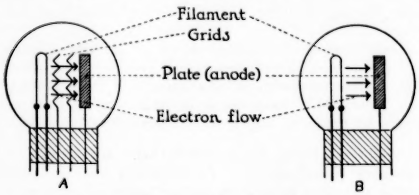

Fig. 4.—*A*, thermionic vacuum tube; *B*, rectifier vacuum tube.

A coil of wire wound in the form of a helix possesses inductance, which is measured in henrys or millihenrys. The value of the inductance depends on the number of turns and the coil diameter. A large inductance coil offers a considerable impedance to the flow of alternating current. A large coil in an alternating current circuit would reduce the current without an appreciable loss of energy. "Choke coils" are coils with a large inductance, i. e., many turns and a large diameter, which prevent the passage of alternating current but permit the passage of direct current.

105
935

HIGH FREQUENCY APPARATUS

The High Frequency Ammeter or Milliammeter.—These instruments are now made of the thermocouple type, although the older machines have hot wire meters. A vacuum thermocouple consists of an evacuated glass bulb (fig. 3) with four wires. Two of these conduct the high frequency current to a small heated wire. This wire is heated by the high frequency current; the greater the current, the more heat produced and the higher the temperature of the wire. A thermocouple junction of two dissimilar metals soldered or brazed together is joined to the center of the heating wire, the junction of the two metals being at the point of contact with the heated wire. The junction of the dissimilar metals behaves as a small direct current battery which produces a voltage proportional to the temperature or the squared value of the current. This voltage is recorded on a small galvanometer to which the other two wires from the evacuated bulb are attached.

The conventional diathermy ammeter is usually placed on the panel of the diathermy machine and indicates the amount of high frequency current flowing through the patient. Since the diathermy dosage is regulated by the meter, this instrument must be kept in good order. If the needle does not indicate zero when the switch is "off," the needle should be adjusted to zero by a small regulating screw near the bearing of the needle. The metallic parts of one electrode cable should not touch the metallic parts of the other cable. This would cause a short circuit, which might "burn out" the small heated wire of the vacuum thermocouple or the fuse in the meter. If the needle of the meter does not deflect promptly in a normal manner when the current is turned "on," it should be examined by a qualified person. It is relevant to mention at this point that meters on short wave machines do not read the true value of the current passing through the patient.

Low Frequency Transformer.—Every diathermy machine, whether vacuum tube or spark gap, contains a low frequency transformer. This changes low voltage to high voltage. The transformer consists of an iron core on which two separate coils are wound, the coils being called the primary and the secondary. The ordinary sixty cycle illuminating current flows through the primary.

The Thermionic Vacuum Tube.—This is an evacuated tube resembling a light bulb. It is made of glass with an insulated base. Metallic connections pass through the base from the outside to the inside of the tube (fig. 4 *A*). These metallic connections on the outside are made to fit into metallic sockets through which electric current can be conducted into the interior of the tube. The metallic parts within the tube consist of the following: 1. A filament heated by a suitable current. When heated, the filament emits electrons. 2. An anode, which is usually a large plate of metal or carbon. This plate is connected to a source of positive electricity, which attracts the negative electrons emitted by the filament. 3. Between the anode and the filament there may be interposed one or more grids. These grids, which consist of wire screens, are usually connected to varying voltages, so that when the grid voltage is changed the electric current flowing from filament to plate changes in a corresponding manner.

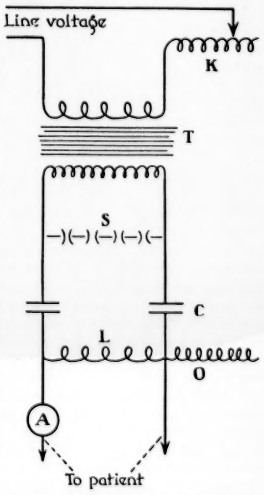

Fig. 5.—Diagram of a typical spark gap diathermy machine: *K*, variable inductance in primary circuit of input transformer to regulate current; *T*, 60 cycle transformer; *S*, spark gaps; *C*, condensers in oscillating circuit; *L*, inductance of oscillating circuit; *O*, Oudin coil; *A*, high frequency ammeter.

The rectifier vacuum tube (fig. 4 *B*) is a thermionic vacuum tube containing a heated filament which emits electrons and an anode to which the electrons are drawn. The current flows only in one direction through this tube; namely, negative charges (electrons) from the filament to the anode. If this tube is placed in a circuit in which an alternating voltage is applied, the current will flow only in one direction and will not oscillate, as would happen if the tube were not in the circuit. This tube is used to

change alternating current to direct current. It is used in vacuum tube diathermy and to rectify the current for x-ray machines.

The Spark Gap Diathermy Machine.—Figure 5 shows the circuit of the spark gap diathermy machine. The 60 cycle alternating current from the power mains passes through the primary of the 60 cycle transformer, *T*. The amount of current flowing through the primary

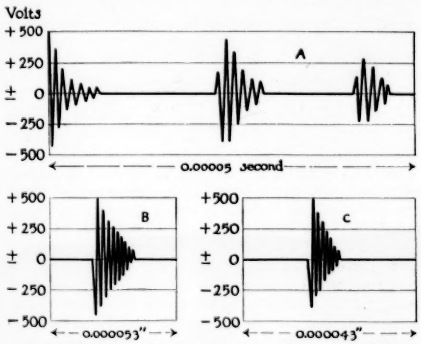

Fig. 6.—Representative types of diathermy currents: *A*, cutting current, slow damping, wave trains from 0.00001 to 0.000015 second apart; *B*, coagulation current wave train; *C*, diathermy current wave train, wave trains 0.0001 second apart; rapid damping.

can be regulated by the variable inductance, *K*. The secondary coil of *T* delivers high voltage alternating current to the condensers, *CC*. These store electrical charges. When a high charge accumulates, the condensers "discharge" and a current oscillates back and forth in the circuit *SCCL*. The frequency of oscillation depends on the amount of inductance *L* and the capacity *C;* the lower the capacity and inductance, the higher the frequency. The type of current is the damped oscillating type already described. The part of the oscillating current of the circuit *SCCL* passes to the patient through the meter.

The Vacuum Tube Diathermy Machine.—This machine is simply a vacuum tube oscillator. The machine converts the 60 cycle alternating current from the power mains into high frequency current with frequencies varying from 10 million to 100 million cycles per second. Detailed descriptions of such oscillators for therapeutic purposes are quite infrequent in the medical literature. Two of the more recent descriptions are those of Schereschewsky [2] and Bishop.[3] Figure 7 shows a typical vacuum tube generator of high frequency currents of the type used by Bishop. The circuit is not recommended by the Council over any other practical hookup. Two transformers, T_1 and T_2, convert the 110 volt sixty cycle alternating current from the power mains into (1) low voltage current to heat the filaments of the vacuum tubes (transformer T_1) and (2) a high voltage current for the anodes of the vacuum tubes (transformer T_2). The high voltage current from T_2 is rectified; i. e., converted into direct current in the rectifier vacuum tubes 866. The high voltage direct current is applied to the anode of the oscillator tubes 852. The oscillating circuit in which the high frequency current is generated contains the inductance *L* and the capacity *C*. The frequency of the alternating current is determined by the magnitudes of *L* and *C*. To produce the current of very high frequency, *L* and *C* must be small. *Ch Ch* are "choke coils," which prevent the high frequency current from flowing into the rectifier tubes and the transformers. C_2 C_2 are two "blocking condensers," which prevent the direct current from the anode of the oscillating tubes from flowing into the high frequency circuit and the grids.

The theory of the production of an alternating current will not be given here, since it involves a considerable amount of technical discussion and mathematics. The theory in a brief form is well presented in an article by Réchou [4] and in more detail by Morecroft.[5]

REQUIREMENTS OF A DIATHERMY MACHINE

Energy Requirement.—A diathermy machine for clinical use must be able to deliver sufficient energy to the patient to produce the required amount of heat in the tissues. A machine should be capable of delivering to the patient 200 watts of high frequency power.[6]

Efficiency Requirement.—Diathermy machines will overheat if poorly constructed or if made of inferior

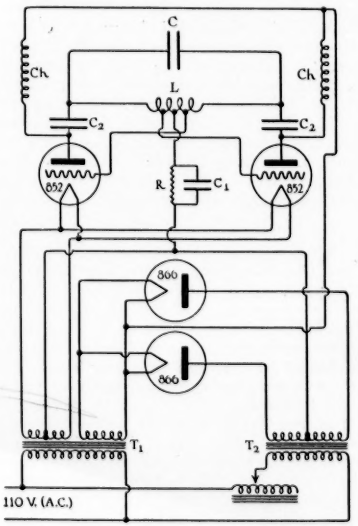

Fig. 7.—One type of vacuum tube generator of high frequency currents.

material. The heat is produced in the machine and not in the patient. This is particularly noticeable in the transformers. Many manufacturers of diathermy machines are guilty of furnishing their machines with cheap and inefficient transformers. During a test of the diathermy machine the temperature of the trans-

2. Schereschewsky, J. W.: Heating Effect of Very High Condenser Fields on Organic Fluids and Tissues, Pub. Health Rep. **48**: 844-857 (July 21) 1933.
3. Bishop, F. W.: An Apparatus for the Production of Local Heat in Body Tissue by Means of High Frequency Electric Fields, Radiology **21**: 487-491 (Nov.) 1933.
4. Réchou: Les ondes courtes en médecine, J. de radiol. et d'électrol. **17**: 481 (Sept.) 1933.
5. Morecroft, J. H.; Pinto, A., and Curry, W. A.: Principles of Radio Communication, New York, John Wiley & Sons, 1933.
6. Hemingway, Allan: The Examination of Diathermy Machines for Local Diathermy Treatments, J. A. M. A. **101**: 776-778 (Sept. 2) 1933.

former must be noted. This must not exceed the limits specified by the American Institute of Electrical Engineers.

Frequency Requirement.—The high frequency diathermy current must not cause electrical stimulation of the tissues. In order to prevent electrical shock, the frequency should be high. It is recommended that the frequency exceed one-half million cycles per second.

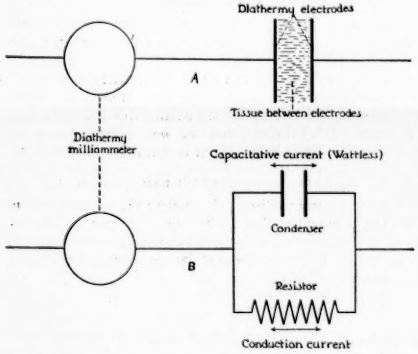

Fig. 8.—Tissue between diathermy electrodes represented electrically.

There should be no low frequency transient currents associated with the high frequency currents.

Insulation and Protection Requirement.—The cables to the patient and the connections to the cables should be well insulated with no exposed metallic parts raised to a high voltage. The insulation within the machine must be adequate to prevent internal leak currents, which would lower the efficiency. The spark gaps must be covered.

Testing of Machines.—The Council on Physical Therapy has been conducting a series of rigid tests on various commercial diathermy machines. Any machine approved by the Council will conform to the specifications required.

THEORY OF THE HEATING OF TISSUES BY HIGH FREQUENCY CURRENTS

1. *Diathermy.*—In a diathermy treatment, metallic or saline pad electrodes are applied to the skin of the patient. The diathermy current passes through the tissues and warms those tissues traversed by the current. The current follows the tissues of lowest electrical resistance, such as blood and muscle, and evades when possible the tissues of high resistance, as fat and bone. In cases in which a high resistant tissue cannot be avoided, as subcutaneous fat directly beneath the electrodes, the heating is more intense, as is indicated by Joule's law, the heating being proportional to the resistance multiplied by the squared value of the current. Hence a high resistance and a high current value would produce a high temperature. The tissue between diathermy electrodes can be represented electrically by the arrangement in figure 8. The tissue between the electrodes behaves as a dielectric and the metallic plates as the plates of a condenser; hence it is necessary to consider two types of current: (1) that which flows to charge and discharge the condenser plates and forms the wattless component, and (2) the conduction current, which flows through the tissue and produces heat. It has been shown [7] that the diathermy current for diathermy frequencies less than 2×10^6 cycles per second is almost entirely conduction current. The significance of this is that the diathermy current as indicated by the diathermy meter is all utilized in heating the patient. More technical details are given in an earlier paper.[8]

The upper limit that may be used without causing burns and possible necrosis lies between 10 and 20 milliamperes per square centimeter or 100 milliamperes per square inch of the smallest electrode.

The specific resistances in ohms of human tissue for high frequency currents are as follows:[9] skin, 289; fat, 2,180; bone, 1,800; muscle, 110; kidney, 126; liver, 298; cardiac muscle, 132; spleen, 256.

Since the diathermy current is almost entirely conduction current, that is, the tissues offer a pure resistance to the diathermy current with no reactance, it is possible to obtain the heat production in the tissue. If a high frequency voltmeter is connected in parallel with the patient and the effective voltage and current read from the voltmeter and ammeter, the rate of heat production in the patient is equal to the voltage multiplied by the current (watts).

2. *Short Wave Diathermy.*—Pätzold [10] has shown that an electrolytic conductor such as an electrolytic solution placed between the metallic electrodes but not in actual contact with the electrodes can be represented by the equivalent circuit shown in figure 9. It is reasonable to suppose that the same circuit would represent a section of the human body between similar electrodes, though it should be remembered that the human body is a complex, heterogeneous structure. The condenser C_1 represents a condenser in parallel with the tissue to be heated. Part of the high frequency current charges and discharges the metallic plates and does not pass as a conduction (heating) current through the patient. This component I_1 of the total current I is said to be wattless. Hence the ammeter does not measure the true heating current, since some of the energy is radiated into space. The condensers C_2 C_2 have each a dielectric of air between two conductors; namely, the

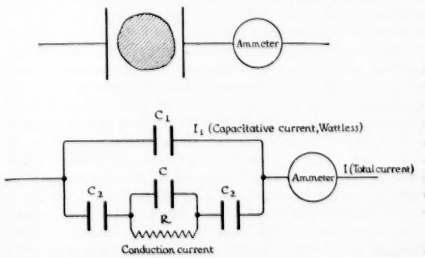

Fig. 9.—Equivalent circuit representing an electrolytic solution placed between metallic electrodes but not in actual contact with the electrodes.

tissue and one metallic plate. This capacity becomes lower the closer the metallic electrodes approach the tissue, in which event the conduction current flowing

7. Hemingway, Allan, and Stenstrom, K. W.: Physical Characteristics of High Frequency Current, J. A. M. A. **98**: 1446-55 (April 23) 1932.
8. Hemingway, Allan: Thermal Effects of Diathermy, Radiology **14**: 99 (Feb.) 1930.
9. Hemingway, Allan, and McClendon, J. F.: The High Frequency Resistance of Human Tissue, Am. J. Physiol. **102**: 56-59 (Oct.) 1932.
10. Pätzold, Johannes: Die Erwarmung der Elektrolyte im hochfrequenten Kondensatorfeld und ihre Bedeutung für die Medizine, Ztschr. f. Hochfrequentztechnik. **36**: 85-98, 1930.

through the tissue is increased at the expense of the wattless current, I_1. The true capacity of the tissue C depends on the dielectric constant and the shape and size of the body between the electrodes. R depends on the specific resistance of the tissues. For the human body between metallic electrodes the values C_1, C_2, R and C are unknown. They vary with the shape, size, position and composition of the tissues.

The closer the body between the electrodes is brought to the electrodes, the more the short wave treatment approaches the conditions of diathermy. That is, the closer the body to the electrodes the greater will be the surface heating of the tissue next to the electrode. In order to have a more nearly uniform heating throughout, the tissues would have to be at a considerable distance from the electrodes.

It has been shown by Hosmer,[11] Pätzold,[10] McClennan and Burton,[12] and others that there is a selective heating of the electrolytic conductor, which depends on the frequency of the alternating current and the specific resistance and dielectric constant of the tissue. Thus, as the frequency is varied the various tissues in turn would be selectively heated, the ability to be selectively heated depending on conductivity and dielectric constant. Theoretically, at least, there is a possibility that a certain tissue could be selectively heated by varying the frequency of the machine. This has been demonstrated for dead tissues by McClennan and Burton [12b] and by Jellinek.[13] Schliephake [14] has shown that a temperature distribution in parts of dead cadavers heated by short wave diathermy differs from the temperature distribution of diathermy. These experiments, while of theoretical interest, do not apply without modification to the living animal. The circulation of the blood and its variations in the different tissues and under different conditions affect markedly the temperature of a heated organ. For clinical use, temperature distributions in living animals or human subjects must be made. Recently Sheard and Pratt [15] have measured temperature distributions in the region of the knee joint of anesthetized dogs when heated with short wave diathermy of a frequency of 27 million cycles per second. They have found in agreement with others that electrodes placed close to the skin give a temperature distribution in the tissues resembling the usual diathermy.

The usual spark gap diathermy furnishing alternating current of frequencies from one half million to two million cycles per second heats those tissues with the lower electrical resistance, such as blood, muscle and glandular tissue. These are the tissues which possess a rich blood supply. With the conventional type of diathermy there is little possibility of overheating these tissues, since the rapid flow of blood through them distributes the heat to neighboring parts. With short wave diathermy the conditions are somewhat different. The short wave diathermy tends to produce selective heating of tissues, which depends on their electrical resistance, dielectric constant and structure. The temperature to which a tissue is raised during a treatment depends on two factors: namely, (1) the rate of heat production by the electrical current, raising the temperature; and (2) the rate of blood flow through the tissue, which lowers the temperature. In the case of articular cartilage, for instance, where the blood supply is poor, there is a possibility of overheating. The seriousness of this is enhanced when one considers the slow rate of regeneration of this cartilage.

11. Hosmer, Helen R.: Heating Effects Observed in a High Frequency Field, Science **68**: 325 (Oct. 5) 1928.
12. McClennan, J. C., and Burton, A. C.: (*a*) The Heating of Electrolytes in High Frequency Fields, Canad. J. Research **3**: 224-239 (Sept.) 1930; (*b*) Selective Heating by Short Radio Waves and Its Application in Electrotherapy, ibid. **5**: 550-566 (Nov.) 1931.
13. Jellinek: Rôle de la structure des tissus dans leur échauffement par les ondes courtes, Compt. rend. Acad. d. sc. **198**: 1723 (May 7) 1934.
14. Schliephake, E.: Tiefenwirkungen im Organismus durch kurze elektrische Wellen, Ztschr. d. ges. exper. Med. **66**: 212, 1929.
15. Sheard, Charles, and Pratt, C. B.: Changes in Temperatures of Tissues After Systemic Applications of Short Wave Electric Fields, Proc. Soc. Exper. Biol. & Med. **32**: 763-66 (Feb.) 1935. Pratt, C. B., and Sheard, Charles: Thermal Changes in Tissues by Local Applications in Radiothermy, ibid. **32**: 766-771 (Feb.) 1935.

CONCLUSION

The newer method of heat therapy, namely, the short wave diathermy, is at present in an experimental stage. Much valuable research has been done to clarify the problems involved; at the same time there are in the literature some very confusing and misleading statements in regard to the merits of this form of therapy. For a good critical discussion we would recommend the recent article by Mortimer and Osborne.[1] In particular, we would recommend that, owing to the lack of knowledge on many phases of this work and the indications of dangerous possibilities, the newer machines be used with the utmost caution. On the other hand, conventional diathermy is an old established form of therapy about which much is known that has proved to be of definite clinical value.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1935, p. 123).

The following dosage form has been accepted:

Ampoule Bismuth Subsalicylate with Butyn-D. R. L., 1 cc.: A 10 per cent suspension of bismuth subsalicylate-U. S. P. in peanut oil to which has been added 0.4 per cent of butyn and metaphen 1: 20,000. Each cubic centimeter represents from 0.057 to 0.059 Gm. of elemental bismuth.

Prepared by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

DIOTHANE (See New and Nonofficial Remedies, 1935, p. 54; also THE JOURNAL, Feb. 23, 1935, p. 641).

The following dosage form has been accepted:

Ampules Diothane 0.5% in Solution of Sodium Chloride 0.6%, 6 cc.

"SHADOCOL NOT ACCEPTABLE FOR N. N. R.": A CORRECTION

THE JOURNAL, March 16, 1935, page 922, contains the Council's report explaining the unacceptability of Shadocol (Davies, Rose & Co., Ltd.) for inclusion in New and Nonofficial Remedies. In this report appears the following statement:

"The addition of lactose and citric acid represents an unessential modification which is probably useless except as a commonplace flavor. It is fallacious to consider a modification of this sort as representing 'an original product . . . the result of extensive research,' and to claim that it is unequaled by other preparations."

A letter received from Davies, Rose & Co., Ltd., explains to the Council that the citric acid was added not as a flavor but for the purpose of liberating the acid form of tetraiodophenolphthalein from the sodium salt as a fine precipitate, with a view to the obviating of gastric irritation. Accordingly, the criticism expressed in the quoted statement becomes invalid. The Council regrets the error in its original report and deems it necessary that this statement be published. However, the product remains unacceptable because of the proprietary name.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

RAYMOND HERTWIG, Secretary.

ACCEPTANCE WITHDRAWN

BIOVEGETIN

Manufacturer.—BioVegetin Products, Inc., Chicago.

Description.—Finely powdered mixture of dehydrated spinach, tomatoes, carrots and irradiated yeast.

Manufacture.—Fresh spinach freed of roots and stems is mechanically washed and placed on cloths on wire trays, which are run through tunnels of warm filtered air not exceeding 71 C. The dry spinach is pulverized and stored in drums. Fresh carrots are mechanically washed, peeled, again washed and subsequently treated as the spinach. Tomatoes, trimmed by hand and washed, are processed as described above. Irradiated yeast (not less than 2,500 U. S. P. vitamin units per gram) is autoclaved for twenty minutes at 17 pounds pressure to kill the yeast. The powdered ingredients are mixed in definite proportions, sifted, and packed in jars.

Analysis (submitted by manufacturer).—

	per cent
Moisture	10.3
Ash	6.1
Fat (ether extract)	3.4
Protein (N × 6.25)	20.1
Reducing sugars as invert sugar	13.2
Sucrose (copper reduction method)	6.4
Starch	2.5
Crude fiber	6.5
Carbohydrates other than crude fiber (by difference)	53.6
Iron (Fe)	0.013
Calcium (Ca)	0.51
Copper (Cu)	0.0012

Calories.—3.3 per gram; 94 per ounce.

Vitamins.—Assay shows 400 U. S. P. vitamin D units per gram.

Reason for Withdrawal of Acceptance.—BioVegetin was formally accepted Sept. 22, 1933. Recently it was learned the BioVegetin Products, Inc., was merchandising a product named VegeMucene in conflict with the policies of the American Medical Association as set forth in the rules of the Council on Pharmacy and Chemistry. VegeMucene is an unoriginal preparation of powdered okra marketed under a noninformative and misleading proprietary name, promoted with exaggerated and unwarranted therapeutic claims and advertised directly to the public, for which reasons the product is unacceptable to the Council on Pharmacy and Chemistry (THE JOURNAL, Jan. 26, 1935). Since the merchandising practices of the manufacturing company, here cited, conflict with the policies of the American Medical Association, the acceptance of BioVegetin is being withdrawn in accordance with the recently adopted Committee rule that:

> No food product or class of food products, or advertising therefor, will be accepted, or if accepted will be retained, if in the opinion of the Committee such acceptance is likely to be construed as an acceptance or approval of any other products or activities of a firm, when such other products or activities of such firm are in conflict with the policies of the American Medical Association as set forth in the rules of the Committee on Foods, or those of the Council on Pharmacy and Chemistry or the Council on Physical Therapy.

ACCEPTANCE WITHDRAWN

LUCKY GLUTEN FLOUR

Manufacturer.—Federal Mill, Inc., Lockport, N. Y.

Description.—Wheat gluten flour containing not more than 44 per cent of starch.

Manufacture and Analysis.—See THE JOURNAL, July 15, 1933, page 211.

Uselessness as a Special Purpose Food.—Lucky Gluten Flour, manufactured specially for use in diets restricted in dextrose formers, was accepted in 1933 before the Committee adopted definite requirements for a special purpose flour of this character. To be eligible for acceptance at this time, such type of flour shall contain dextrose formers yielding dextrose in an amount not greater than 3.3 Gm. per hundred cubic centimeters (the dextrose equivalence being computed as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). Dextrose formers of Lucky Gluten Flour, on the other hand, yield approximately 50 Gm. of dextrose per hundred cubic centimeters.

There is authoritative evidence that commercially prepared special diabetic foods such as gluten flour are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. Artificial substitutes for ordinary foods are not to be favored; it is much better for the diabetic patient to learn how to plan his diet with foods in common use and readily available. The diet should be exactly prescribed in carbohydrate, protein and fat, and total calories.

The designation of a food as a "diabetic food" merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Except for the necessity of restricting foods to avoid overstepping the food tolerance, there are no special diabetic nutrition requirements. The exploitation of starch-free or low carbohydrate foods containing an excess of protein for use by diabetic patients is unwarranted. Protein may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

Because Lucky Gluten Flour is adjudged without usefulness or special adaptability for inclusion in diets restricted in dextrose formers, it no longer will be listed among the accepted foods of the Committee on Foods.

Gluten flours of other manufacturers, for the reasons stated, are not eligible for acceptance.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

SOLITAIRE BRAND SIEVED ASPARAGUS, BEETS, CARROTS, GREEN BEANS, PEAS, PRUNES, SPINACH, TOMATOES

UNSEASONED

Distributor.—The Morey Mercantile Company, Denver.

Packer.—The Nielsen Corp., Ltd., Oakland, Calif.

Description.—Sieved asparagus, beets, carrots, green beans, peas, prunes, spinach and tomatoes; prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt. These products are the same as the accepted Warranty vegetables and fruits (THE JOURNAL, April 27, 1935, p. 1504; April 13, 1935, p. 1331; March 16, 1935, p. 923; April 6, 1935, p. 1241; April 20, 1935, p. 1419; March 30, 1935, p. 1074; Feb. 2, 1935, p. 399; June 1, 1935, p. 1999).

REYNOLDS' BRAND PITTED RED CHERRIES, WATER PACK
REYNOLDS' CHERRYLAND BRAND PITTED RED CHERRIES, WATER PACK

Manufacturer.—Reynolds Preserving Company, Sturgeon Bay, Wis.

Description.—Canned cooked red Wisconsin cherries packed in water without added sugar or salt. The same as Cellu Red Pitted Cherries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept. 14, 1935, p. 885).

SWEET LIFE EVAPORATED MILK

Distributor.—The Sweet Life Food Corporation, Brooklyn.

Packer.—Oatman Condensed Milk Co., Dundee, Ill.

Description.—Canned, unsweetened evaporated milk, the same as Oatman's Brand Evaporated Milk (THE JOURNAL, April 16, 1932, p. 1376).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 2, 1935

CONTROL OF RABIES

Bites by domestic animals, particularly dogs, are not as uncommon today as might be believed. A recent statistical survey [1] contains the rather surprising statement that in New York City alone there was a total of 20,416 instances of bites by animals reported to the department of health during 1934 and that 19,443 of these were inflicted by dogs. Laboratory examinations of specimens of the available biting dogs showed that forty-four were rabid. The survey further shows that there has been a steady increase in the number of reported instances of dog bites in New York since 1908 and that, despite the availability of satisfactory antirabic vaccines, the number of deaths from human rabies has remained virtually unaltered for the past twenty-five years both in New York City and in the country at large. There were sixty-five fatal cases of human rabies in the registration area of the United States in 1933. In view of these data it is obvious that increased attention should be directed to minimizing biting by dogs and thus to the occurrence of rabies.

The control of rabies is often a difficult and unsatisfactory procedure. Reliance cannot be placed solely on the treatment of the exposed subject by the Pasteur prophylactic method, since this treatment, even though properly given, may not be given sufficiently early and does not invariably protect the patient. The logical procedure is the minimizing of canine rabies and its spread by biting dogs. Actual immunization of dogs against canine rabies has been extensively studied in recent years but should be regarded as still in the experimental stage, though there is some indication that it may prove effective. The effective control of rabies at present, therefore, must revert to the control of all biting dogs. This plan necessarily involves not only the dog but also its owner. There should be a thorough elimination of all stray and unlicensed dogs. Those which are licensed should not be permitted to roam freely on public grounds but should be restrained by a leash or should be muzzled. Statistical studies in New York have shown that bites from dogs on a leash or muzzled, as required by law in that city, are extremely rare. Apparently there has been laxity on the part of the law-enforcing personnel in New York or a lack of cooperation on the part of dog owners to prevent the complete effectiveness of the dog restraining devices. The suggestion has been made [1] that the cooperation of dog owners in the enforcement of this law might be more completely elicited if the responsibility of dog bites and the burden of all the accruing expenses should be placed squarely on the owners of the dogs.

As a supplementary measure to legislation, the general enlightenment of prospective dog owners as to the type of dog most suitable to his use and facilities might be of value. It is well known, for example, that female dogs are gentler with children than are males, that German police dogs bite more frequently than do other breeds, and that long-haired dogs develop rabies less frequently than short-haired dogs because of the greater opportunity for the removal of infectious saliva by the coat of the former. All dog owners should be advised to seek information regularly from a capable veterinarian regarding the diet, training and current health problems of their dogs.

1. Olesen, Robert: Control of Rabies in New York City, Pub. Health Rep. **50**: 1087 (Aug. 16) 1935.

ISOTOPES IN PHYSIOLOGIC RESEARCH

The term isotopes was coined by Soddy to describe two or more chemical elements of different atomic weights but with identical chemical properties. For the most part, these isotopic elements are also physically identical, except only with regard to the relatively few physical properties that depend on atomic mass directly. The development of knowledge of isotopes represents much of interest not only to the chemist and the physicist but to the investigators in all branches of science. About 253 stable isotopes are known,[1] and only a few elements remain without definite data to confirm the existence of all elements in isotopic forms. It is now clear, for example, that chlorine consists of two isotopes of atomic weight 35 and 37, mixed in such proportions as to give the usual atomic weight of 35.46. Some elements may have six isotopes (krypton), while other elements contain even more (xenon and tin).

Probably the most interesting chapter in the story of isotopes is the discovery of deuterium, the heavy isotope of hydrogen.[2] While this isotope of mass 2 exists only in small proportion, about 1 in 5,000 to 6,000 of the main isotope of mass 1, nevertheless, because of the marked difference in mass of the two components, the relative concentration of the two isotopes can be altered very definitely by various physical

1. Aston, F. W.: Science **82**: 235 (Sept. 13) 1935.
2. For reviews see Urey, H. C., and Teal, G. K.: Rev. Modern Physic. **7**: 34, 1935. Farkas, A.: Light and Heavy Hydrogen, Cambridge, 1935.

and chemical processes. This has resulted in the preparation of water in which the isotope of mass 1 is completely replaced by the isotope of hydrogen of mass 2. Although this heavy water resembles ordinary water in appearance, its physical and chemical properties in general show definite differences. The surface tension is lower, while the viscosity is much greater. The density of this heavy water is about 10 per cent greater than ordinary water, while its freezing point is 3.8 degrees C. higher and its boiling point is elevated 1.42 degrees C. The preparation of the new water has resulted not only in the detailed study of its chemical and physical properties but also in investigations of its effect on the processes occurring in animal and plant life. A large number of reports have been published dealing with the influence of heavy water on growth, on enzyme reactions, and on fundamental transformations in the cell. It appears, in general, that the substitution of heavy hydrogen for its lighter isotope in ordinary water produces a fluid which retards the majority of biologic processes.

It is hardly necessary to point out the wide and important fields of work opened up by the discovery of heavy hydrogen. Heavy water has received much attention, but it is obvious that the research is not limited to this solvent. Because of the greater mass of deuterium as compared to ordinary hydrogen, it is to be expected that compounds formed with the new isotope should in some cases exhibit rather different properties from the normal hydrogen compounds. Preliminary inorganic and organic chemical studies have verified this postulation. More interesting from the physiologic standpoint has been the recent suggestion [3] that deuterium might be used as an indicator in the study of intermediary metabolism. The fact that the hydrogen isotope deuterium occurs in the same proportion in the hydrogen of organic matter as it does in the hydrogen of ordinary water seems to indicate that the living organism is incapable of distinguishing between the organic molecules which contain deuterium and those which do not. If the reverse were true, organic matter of different biologic organs would display differences in isotopic ratios. Investigators at Columbia University have reported [3] interesting applications of this fact. The following compounds containing heavy hydrogen have been prepared: stearic acid containing 4 deuterium atoms; a deuterium-containing fat and a sterol derivative with 2 deuterium atoms in the compound. These new products are reported to have properties indistinguishable from those of their naturally occurring analogues. Nevertheless, as the deuterium content of these substances or their metabolically produced derivatives can readily be determined from the properties of the water formed on combustion, their fate in the organism can be followed even after considerable dilution.

Interesting results already obtained from the use of deuterium as an experimental tool support the belief that much of value may be expected from investigations of this type. Mice have been fed a diet in which was incorporated the deuterium-containing fat, and after a time the tissues of the animals were subjected to analysis for deuterium. Although the diet fed was insufficient in quantity to maintain the body weight of the animals, it was found that a large amount of the absorbed fat was deposited in the depots, thus indicating that the fat which was burned was not oxidized directly after absorption but had been taken from the fat depots. Dietary fat is therefore for the most part apparently deposited in the fat tissues before it is utilized. These authors have also made suggestive and important preliminary observations of sterol metabolism which indicate that certain interesting relationships between the members and the derivatives of this lipid group may be clarified by the use of deuterium in metabolism studies.

3. Schoenheimer, Rudolf, and Rittenberg, D.: J. Biol. Chem. **111**: 163, 169, 175 (Sept.) 1935. Schoenheimer, Rudolf; Rittenberg, D., and Graff, M., ibid. **111**: 183 (Sept.) 1935.

CYANIDE ANTIDOTES AND MEDICAL PROGRESS

Recent successes with methylene blue and sodium nitrite in the treatment of cyanide poisoning are striking.[1] As a result, the treatment of poisoning in general is receiving more attention and undergoing creditable revision. These tendencies are resulting in more than the development of life-saving measures. They are leading to a fuller appreciation of fundamentals in pharmacologic reactions and physiologic processes. Sometimes the relationships are quite unsuspected.

Methylene blue and sodium nitrite are far apart chemically, physically and pharmacologically, so that a common factor in their antagonism of cyanide poisoning would hardly be suspected. Yet that is exactly what has been discovered, and the discovery testifies to the value of the experimental method in medical science. This common denominator is specific and definite. Its utilization should remove all guesswork from the treatment of cases of cyanide poisoning.

Historically, however, the discovery is one of those curious anomalies of reportorial service in medicine. For nearly forty years the potential value of the common denominator in cyanide poisoning, the methemoglobin process, slumbered unnoticed in the tomes of medical science. For twelve years the demonstrated value of methylene blue in cyanide poisoning also went unrecognized until the pharmacologist Hug, in South America, successfully reasoned to this conclusion. After all, twelve or forty years is but a brief period in the history of human endeavor. Today the merely interesting experiment of yesterday is a life-saving measure. The world-wide confirmations of this discovery, beginning with Hungary and then spreading to

1. Hanzlik, P. J., and Richardson, A. P.: Cyanide Antidotes, J. A. M. A. **102**: 1740 (May 26) 1934.

Belgium, Sweden, the United States and South America, testify to the truly international scope and spirit of medical science.

Eventually J. C. Geiger, health official of San Francisco, acting on the recommendation of Hanzlik and Richardson,[1] demonstrated the humanitarian value of this comparatively old, yet recent, discovery.[2] This single clinical experiment has deservedly earned a widespread approbation. In one sweep it confirmed the value of controlled experimental procedure, saved human life, and marked progress in medical science. These striking events have moved so suddenly that their full significance for medicine cannot be measured yet. But it is already apparent that many investigations of oxidation-reduction dyes, of methemoglobin agents and processes, and of related problems have been stimulated the world over. Apparently, nothing need be too remote or unsuspected to illuminate the dim crossings and by-ways on the great highway of medical progress.

Current Comment

TROPICAL DISEASES IN THE UNITED STATES

The field of tropical medicine has been enormously extended in recent years by the introduction or discovery of certain diseases in temperate climates. With the more recent discoveries, tropical medicine has come to require a knowledge of many of the sciences: protozoology, helminthology, entomology, bacteriology, meteorology, mycology, in addition to the various clinical fields of medicine; furthermore, the subject is not limited to these sciences as applied to man but extends to lower animals as well. Therefore the physician who practices tropical medicine may have to use knowledge from many other fields of learning. Not only are tropical diseases of paramount importance to public health, but the etiology and prevention of some of them are still a challenge to science. Realizing the need for more information on the distribution and incidence of tropical diseases, an advisory committee of the Division of Medical Sciences of the National Research Council made a survey [1] based on public health reports and information gathered from all parts of the world in reply to a questionnaire. In this geography of disease is a section reporting the information obtained from the latest available published health reports of fifteen states in the United States. Among the diseases usually classified as tropical diseases reported in one or more of these states are amebic dysentery, malaria, hookworm disease, relapsing fever, ascariasis, plague, leprosy, beriberi, bacillary dysentery, typhoid and dengue fever. Malaria was reported in thirteen of the fifteen states, hookworm disease and bacillary dysentery in ten states, ascariasis in eight states, amebic dysentery in four, leprosy in four, relapsing fever and plague in at least one state, and dengue fever in five states. In this group of states the greatest number of cases of malaria was reported in Mississippi, with 36,133 cases for the year 1932; next in order was Georgia with 3,411 cases in the same year, and Louisiana with 3,214 cases in 1933. Typhoid is still widespread; in some of the fifteen states in this group several hundred cases were reported. Oklahoma heads the list with 2,620 cases of typhoid in 1931, and Georgia is next with 1,799 cases in 1932. The state reporting the largest number of persons infested with hookworm disease was Alabama with 16,380 positive stools reported among those examined in 1932, and Florida is second on the list with 13,750 positives in 1933. These figures, however, are no indication of the number of clinical cases of hookworm in these two states, as they represent only the positive observation of hookworm eggs in stools examined during the periods specified. Mississippi in 1932 led the list in cases of bacillary dysentery, reporting 5,688 cases, and Georgia was second with 435 cases. Leprosy was reported in California, Florida, Georgia and Louisiana. Much additional information on tropical diseases in these states is presented in the survey, as well as similar data for numerous other countries throughout the world. The director of the studies, Dr. E. B. McKinley, and the advisory committee, comprising Drs. Frederick P. Gay, Richard P. Strong and the late Theobald Smith, point out that their report is far from complete and is only a preliminary study, resulting from two and a half years of work. However, it serves as a beginning of a much needed larger study, which may in the future provide data in a field that is constantly growing in importance.

2. Hanzlik, P. J.: Methylene Blue as Antidote for Cyanide Poisoning, J. A. M. A. **100**: 357 (Feb. 4) 1933.

1. McKinley, E. B.: A Geography of Disease (supplement to the American Journal of Tropical Medicine **15**, September 1935).

AMERICAN RED CROSS PLAN AND HIGHWAY FATALITIES

Because of the alarming total of road accidents in the United States each year, the American Red Cross has determined to establish highway first aid stations throughout the country. In 1934, 36,000 persons were killed on the highways and 1,255,000 were injured. With immediate first aid, many of these lives might have been saved. Already 100 stations are in operation and within the next few weeks 400 or more additional stations are to be established. In each of these stations there will be a list of the nearest local physicians and hospitals, developed by the local chapter of the Red Cross on consultation with the local medical society. The workers and attendants at the first aid stations have been instructed by the Red Cross to receive their training and supervision from local physicians. The attendants must, of course, have completed the standard course in Red Cross first aid. In these first aid stations there will be available, in addition to the personnel, first aid kits, splints for fractures, ready reference telephone directory of medical, hospital and ambulance service, and other first aid equipment. It is understood, of course, that this first aid service is not meant to take the place in any way of medical care. No recompense is to be received by those giving first aid, nor may any donations be received in this connection.

Medical Economics

THIS PANEL SCHEME

EDWARD F. KLEIN, M.D.
PERTH AMBOY, N. J.

I'll look no more. Let my brain turn and the deficient sight topple down headlong.—King Lear, act 3, scene 6.

The only excuse for writing this article on the panel system is one self conceived and self assumed. However, for justification I feel that my experiences and contacts in Germany, Austria, France and Great Britain afford me some right to communicate to my colleagues facts which they have the right to know. In some instances I have drawn on personal talks with physicians working under the panel scheme in their respective countries; in others, on knowledge gained through experience in clinics, in hospitals and with physicians not under the scheme. Many statements are excerpts of panel laws and are consequently true to the crude facts.

Of particular concern is the panel system in England. Being late in introducing compulsory national health insurance, England had the advantage of experiences with other countries. Fundamentally, the medical problems of national health insurance, though varying in detail from country to country, are the same. In the early part of the present year the magazine *Today* (the mouthpiece of the national administration) editorially advocated some such scheme as at present in use in England.

It is well known that private work is scarce; physicians agree as to the drastic reduction of fees, of increasing competition from hospitals, cheap clinics, unorthodox medical practitioners, various new cults instituted, the increasing number of new graduates and finally that there is actually a desperate economizing in medical treatment generally on the part of the public. "We may resentfully chafe at our bonds, and like Prometheus vainly strive to wrest ourselves from the rock of the past in our eagerness to bring relief to the suffering children of men." We must, however, be increasingly conscious of the fundamental fact that it is the past that makes the present, and that what goes before is the key to what comes after.

The good health of the people being of supreme national importance, it is not surprising that governments have sought to compel their working population to take part in some form of health insurance. Germany introduced national health insurance in 1883, Austria in 1885, Hungary in 1891 and Great Britain in 1911, the system becoming operative in 1912. The National Health Insurance Act in general reads as follows: All employed persons (now numbering in Great Britain about 18,500,000), are required to take part in a scheme of state insurance for health purposes. The scheme applies, with certain exceptions, to all persons employed by way of manual labor and to all other employed persons whose rate of remuneration is not more than £250 (about $1,250) a year.

The employer and employed person pay weekly contributions. The state adds a grant out of the public exchequer and the insured person becomes entitled to certain benefits, the principal being medical benefit, periodic cash payments during sickness and disablement known as sickness and disablement benefits and maternity benefit; i. e., a lump sum payment on the birth of a child. The scope of medical benefit consists in the provision of medical attendance by a general practitioner only, proper and sufficient medicine, a limited number of medical and surgical appliances, and the furnishing of records of illness and a certificate of incapacity by the physician. It does not include attendance or treatment in respect of confinement.

In April 1930 the British Medical Association brought forward proposals for a general medical service for the nation which would include about 90 per cent of the population. In 1931 a deputation from the National Federation of Professional Workers, representing 400,000 workers, was received by the secretary to the Ministry of Health, asking coverage for all employees earning up to $2,500 a year. The demand for the extension of health insurance has also brought in its trail the demand for cheaper services by specialists. Many societies have secret lists of specialists available to insured patients at special reduced fees. May 12, 1935, I saw this article in the London *Express:*

PUBLIC HEALTH INSURANCE FOR THE MIDDLE CLASS FAMILY

Health Insurance for the Middle classes who are not covered by the State has been introduced by a group of Lloyds' underwriters who are operating on a national scale. For the middle class man, it solves the problem of doctors' bills, nursery home fees (private rooms in private hospital), and also offers maternity benefit of £12 [$60] if a doctor is employed and £8 [$40] otherwise. For husband, wife and two children the premium is 15 shillings [$3.75] a month. By paying a higher premium, the insured may obtain higher rate of benefit. As age increases, the amount of premium rises. On the other hand, if no claim is made in a year, there is a reduction of 25 per cent in the next years' premium. Anybody can join the scheme without passing a medical examination.

THE SET-UP OF THE PANEL SYSTEM

(Assume now that the English panel system was to be adopted in its entirety.)

Every qualified medical practitioner is entitled to treat insured persons. In the main, the conduct of the physician will be governed by a county insurance committee consisting of from twenty to forty members, one fifth of whom are physicians, three fifths represent insured persons, and one fifth are appointed by the county council appointing druggists and women members. This committee is responsible for the maintenance of adequate medical service for insured persons. In addition to the insurance committee in each county there is set up a local medical committee, representatives of all physicians in the area, and a panel committee, representatives of insurance physicians who are under agreement to treat the insured patients. The function of the local committee is to preserve the interest of the profession as a whole.

Any insured person may apply to a physician for acceptance and inclusion on the physician's list. The physician is entitled to refuse to accept the applicant on his list. If he decides to accept him, he will sign the applicant's medical card and send it to the insurance committee within seven days. The committee will note it and return it to the insured person. The record cards sent by the committee from time to time constitutes the physician's list of insured persons for whom he is responsible. Included in the physician's list of responsibilities are those also who are (1) assigned to him by the insurance committee, (2) applicants not on any other physician's list whom he does not wish to accept on his list, and (3) applicants who are on the list of another physician who is not available.

REMOVAL OF INSURED PERSONS FROM THE LIST

Any insured person may be removed from a physician's list as a result of action by (1) the physician after fourteen days' notice, (2) the insured person by transfer to another physician, and (3) the insurance committee.

THE NUMBER ON THE PHYSICIAN'S PANEL

In 1933 the average number of panel patients for the average physician was 961. A maximum number of 2,500 insured persons is fixed and no physician single handed may ordinarily have more. In special individual cases the amount may be extended to 3,000 and conversely a lower limit of 2,500 may be allowed when desirable. If a physician employs one or more assistants he may obtain an additional 1,500 for each assistant. When two or more physicians are in partnership, the average of all partners must not exceed 2,500. A physician is not only personally responsible for providing adequate medical treatment to his insured patients but is also normally required to give

actual treatment himself. In certain cases, however, another physician may treat one's patients on one's behalf but one is responsible for all acts and omissions of the deputy or assistant and any agreement that one makes with a deputy or partner cannot override the terms of one's agreement with the insurance committee and one must notify the committee in advance whenever one proposes to be away from one's practice for more than a week; also to inform the committee of any arrangements one has made with another physician to treat one's patients when one is unable. The patient, however, is entitled to the physician's personal services except when the physician is prevented by some reasonable cause. A partnership must be in fact as well as in name. One partner is entitled to not less than one third of the share of the pay of any other partner. In 1933 the average number of panel physicians in England was 19,250.

REMUNERATION

Payment for medical services must be looked for to the insurance fund to which the insured person has paid to cover the full cost of medical attendance. A central fund is constituted and is based on an estimate by a government actuary of the whole insured population. This fund is distributed between several areas and the local fund between the physicians. The method of distributing the local fund is one to be determined by the wishes of the majority of the insurance physicians in each area, through their panel committee. Although the central fund or pool is determined on a capitation basis, the local distribution may be on a capitation basis or on the basis of payment per case with such modification as may find favor in the locality. Distribution on a capitation basis is actually the method everywhere in operation. Generally one's share of the fund is calculated by the number of patients on one's list—called units of credit multiplied by the present agreed capitation fee of 9 shillings ($2.25) a year.

If the average number of units of credit or panel patients on the physician's list is 961, his income will be broadly $2,162.25. The settlement is quarterly. The insurance committee at the end of the year will give the physician a statement showing the method by which his share has been calculated. His amount is further calculated with an addition or deduction, as the case may require, for emergency treatment rendered by him to another physician's patients or by other physicians to one's own patients.

RANGE AND TYPE OF MEDICAL SERVICE

The following type services have been held to be within the insurance contract for which one receives no additional fee:

1. Arrest of hemorrhage from the gums.
2. Extraction of a tooth under an anesthetic.
3. Tapping of hydrocele.
4. Removal of a cyst in the neighborhood of the knee.
5. Removal of a fibro-adenoma of the breast.
6. Operation for cellulitis.
7. Removal of a needle from the foot.
8. Amputation as a cure for hammer toe.
9. Taking blood for a Wassermann test.
10. Treatment of fracture of both bones of the leg with dislocation.
11. Treatment of gonorrhea.
12. Curettement of the uterus.
13. Operation for fissure in ano; operation for deep abscess of the neck.
14. Dislocation of the elbow and reduction under chloroform.
15. Removal of epithelioma of the lip.

Regarding preventive treatment, if the physician considers it necessary or desirable that this should be done, he is by virtue of his agreement under obligation to do it and cannot charge or accept a fee for doing it. If a patient refuses to undergo an operation and the refusal may result in need for more frequent attendance, the physician is requested to provide the attendance free of charge.

TREATMENT BY SPECIALISTS

The insured person is not entitled to receive specialist treatment as part of his medical benefit. However, if the physician is of the opinion that the patient's condition requires treatment which is not within the scope of the physician's terms of service, the physician must advise the patient as to the steps that should be taken in order to obtain such treatment. Where possible, the clinics and hospitals or the use of consultants associated with the insurance societies should be used. Whenever one performs an operation or gives treatment which is, in one's opinion, a specialist service, one is required to notify the insurance committee on a special form within two days after the date on which the treatment is given. Consultation with specialists is not affected by provisions of insurance acts and as a rule one may make no special charge. Regarding specialist services rendered by oneself, the burden of proof will be on the physician to show both the operation or service called for skill beyond that possessed by general practitioners as a whole and that one is possessed of the requisite skill and experience. Only in this manner is one entitled to a specialist fee.

VISITS

When the insured patient's condition requires, it is the physicians's duty to visit and treat him at any place where he may be at the time, if that place is within the district in which one has undertaken to visit the insured persons. The rules adopted by the insurance committee require an insured person needing a visit to give the physician notice before a specified hour of the day on which the visit is required, except in cases of emergency. A further rule to protect the physician from unreasonable night calls is that which says that the insured person shall not summon the physician to visit him between the hours of —p. m. and —a. m. except in emergency. The actual time adopted by the insurance committee appears in the rules printed on the insured person's medical card. The physician is required to visit those patients whose condition requires it and not merely those who send the physician notice.

PENALTIES

For neglecting the treatment of a patient, fines ranging from $5 to $500 may result, and even removal from the panel. In addition, further penalties may result for charging fees to insured persons, for failure to keep records, and for failure to comply with the practitioner's obligations toward the regional medical officer. The committee within whose power these actions lie for adjudication is known as the advisory committee, consisting of a chief medical officer of health or his deputy, two other medical officers of the ministry, and three physicians chosen by the minister from a panel nominated by the Insurance Act Committee. The duties of the regional medical officer will be outlined further in the paper.

PRESCRIBING AND SUPPLYING DRUGS

The panel druggist or chemist receives a list of authorized appliances and drugs. Standards for dressings have been adopted; a national formulary has been issued. The main intent is to provide therapeutic efficiency with regard to economy. For example, liniments are to be ordered in quantities of 2 ounces, ointments in 1 ounce quantities, gauze as 1 square yard. As far as possible, practitioners should keep a check on the consumption of medicine. If the cost of a physician's prescribing is called into question, any formal inquiry—which must precede any imposition of a penalty—will be conducted by a purely medical body, the panel committee.

ISSUE OF CERTIFICATE OF INCAPACITY

Sickness benefit and disablement benefit under national health insurance acts are weekly cash payments to the insured person while he is rendered incapable of work by some specific disease or by bodily or mental disablement. The physician's certificate

is the evidence of incapacity on which payment is ordinarily made to one's patients. Every certificate is in effect a check drawn on the benefit funds of approved societies and even the slightest laxity in the issue of a certificate may produce serious financial result. The obligation that the physician has accepted is to issue medical certificates to one's insured patients free of charge. There are seven authorized types of certificates used in the course of insurance practice.

REGIONAL MEDICAL OFFICERS

Regional medical officers (R. M. O.) are officers of the Ministry of Health. They are referees in disputes concerning disabilities and examine records that physicians are required to keep. Consultations regarding capacity or incapacity for work falls under the scope. Such consultation may be demanded either by an insurance society or by the physician. It is the duty of the physician to produce records of attendance on their insured patients to the regional medical officer or his representative at all reasonable times and to furnish him any necessary information in regard to any entry. The regional medical officer is entitled to visit the physician's office or other places where the records are kept but must first give due notice of his visit. The total amount annually distributed in sickness and disablement benefits in Great Britain, mainly on evidence of insurance physician certificates for 1934, was over $100,000,000.

Failure to observe rules causes irregularities in certification, and failures are viewed with grave concern. It may result in disciplinary action, such as removal from the panel or the withholding of part of a physician's remuneration. Such irregularities as antedating and postdating certificates, signing of blank forms, certifying that the patient was examined on a given date when in fact there has been no such examination, the patient not having been seen, are heavily penalized.

In 1921 there were 69,543 cases referred to the regional medical officers for settlement of disputes arising from sickness and disability claims. In 1925 there were 204,088 and in 1931 there were 644,332. From 1931 to 1934, benefit overpayments were the subject of report in twenty-three out of every hundred accounts certified; and it is to be borne in mind that the physicians are responsible for the certifications.

RECORDS OF ILLNESS

The physician is required to keep and furnish records in the official forms of the illness of his patients and his treatment and to afford the regional medical officer access to one's records at all reasonable times. The physician is required to record such facts as he considers would be of use to himself in any subsequent treatment of the patient or to any other practitioner into whose care the patient may subsequently pass.

COMPLAINTS

1. Any insured person or member of the family or other representative of a deceased person may raise a question to the subcommittee of the Insurance Committee in respect to the treatment rendered by a physician or of any alleged failure on his part to render treatment or of some other breach of his duties under his term of service.

2. A physician may raise a question as to the conduct of an insured person while receiving treatment.

3. An approved society may raise a question as to the actions of a physician in regard to any certificate that he is required to furnish to a member of the society.

4. After considering the subcommittee report, the insurance committee may take the following actions:

(*a*) Penalize the physician financially by a deduction from his remuneration.

(*b*) Diminish the number of insured persons that the physician may treat.

(*c*) Withhold medical benefit sums payable to the physician.

(*d*) Remove the physician from the panel after:

(1) Grave or persistent failure to provide treatment.

(2) Personal misconduct of such a character as to bring the service into disrepute.

(3) Repeated breaches of conditions of service without a definite guaranty against recurrence.

As regards insured persons on a physician's list, one is not permitted to demand or accept any payment for any treatment falling within one's term of service. The position is in no way affected by a desire or request on the part of the insured to receive treatment as a private patient. The acceptance of a fee from an insured person not on one's list who specifically asks for treatment as a private patient does not constitute a breach of one's term of service. But it is usually to be deprecated. It may cause a physician considerable inconvenience if the patient afterward denies that he made such a request and applies for a refund of his money.

MISCELLANEOUS NOTES OF CONCERN TO PANEL PHYSICIANS

In case of the death of a physician, patients may be free to procure another. Owing to the absence or mental or bodily disability of a physician, the insurance committee may notify his patients that he is not in a position to carry out his obligations, and arrangements are made with another physician to carry out the practice. Special reduction and modification is arranged by the committee when a physician refuses to make night calls or refuses to have patients assigned to him or has a limited list.

COMMENT

We in the United States simply plead for the continuation of sane, simple medical economics. We hope that our past contentions will not be exploited as ridiculous or absurd or antiquated. Obviously if any conclusions can be drawn from my remarks it is that panel medicine is medicine in a hurry, it is medicine by fear and threats, by bookkeeping, by penalties, by regulations and by starvation wages. Bernard Shaw said "A hungry doctor is perhaps more dangerous than a wild beast."

Dr. Dain, chairman of the Insurance Acts Committee of the British Medical Association, said in his foreword to the third edition of the Medical Insurance Practice, "It must to many have seemed amazing that so everyday a matter as the doctoring of a person could have produced or required such a mass of regulation." Do masses of regulation go hand in hand and concomitant with the good health of our people?

The main object of the insurance act is to enforce the health of the working part of the community, and by its results in this direction the act must be judged. If it has not improved the public health or has not improved its relation to its cost, then the act has failed in its most important object.

C. W. Armstrong, in "The Survival of the Unfittest," says, "All states upon which a premium is set tend to become more common." If sickness and unemployment receive as premium a free gift of other people's money, these states will therefore tend to spread. As long as a man has to rely on healthy living for health, good workmanship for employment, and true thrift for a rainy day, healthy living, good workmanship and thrift will be encouraged and become more common and they bring material reward; but as soon as material reward is to be gained with less effort in neglecting health, work and thrift, such negligence tends to increase.

In 1930 Dr. Alfred Cox, late secretary of the British Medical Association, in a paper contributed at the Congress of the Royal Sanitary Institute, said: "My correspondents nearly all agree that the insurance system combined with other forms of social assistance has had a bad effect on the morale of the working class. They regard public funds as inexhaustible.

WHAT OF PANEL MEDICINE IN OTHER COUNTRIES?

In Germany there was a tendency to limit the professional rights of the physician. There was a movement to extend the income limit of those entitled to insurance and at the same time to limit the total amount which any physician could receive out of the funds. In Austria the condition was very grave. The insured patients were frequently better off than the physicians. In France I was told that the physicians had succeeded on paper, at any rate, in getting adopted its cardinal points, among which were free choice of physician and payment to the physician direct by the patient on a tariff (scale). In Hungary I found a dispute. The profession itself was divided into one group which wished for free choice of physician and those physicians already employed, who opposed it. For all practical purposes, the physicians on the panel system were officials paid by fixed salaries, which were very low.

The position of the physicians in Yugoslavia was that there existed an excess of physicians, and their position was serious. In Holland there is no compulsory insurance and the profession is content.

Dr. Cox again further said: "If the medical profession, so recently much less complex than today, and much less complex than it will be tomorrow, is to practice the art of medicine usefully and sanely, it is necessary that the practitioner should conserve his liberty, his free will and that he should have constantly in view only the interest of his patient with no fear that his diagnosis, his prognosis and above all his treatment will be governed by any other consideration.

The Association professionnelle des médicines has always emphasized that, if the profession reacts against the efforts made to socialize it, it is in the conviction that medicine made impersonal, bureaucratized and loaded up with clerical obligations is not social progress either for physicians or for their patients.

Has the panel system improved the death rate in England? In the sickness benefits from 1921 to 1927, claims of men have risen 41 per cent, claims of unmarried women 60 per cent and claims of married women 106 per cent. In the claims for disablement benefit (payment after twenty-six weeks of sickness benefit) the claims of men have risen 85 per cent, claims of unmarried women 98 per cent and claims of married women 159 per cent.

In 1920, 1928 and 1934 respectively the number of insured persons was 12,787,000, 13,798,000 and 18,500,000. The money paid out in sickness and disablement benefits amounted to £6,708,000 ($33,540,000), £14,689,000 ($73,445,000) and £20,131,930 ($100,659,650). This does not include medical benefits, which in 1934 in England alone amounted to $45,311,995, maternal benefits, hospitalization and dental or optical treatment. The cost of drugs consumed per person has risen from 55 cents to 80 cents in 1927. Since 1927 the cost of medicine and appliances has increased by more than another half million pounds ($2,500,000). In 1921 the total cost of drugs was £1,189,450 ($5,947,250). In 1927 it was £1,886,874 ($9,334,370).

CONCLUSIONS

The evidence is conclusive that, despite the payment of extraordinary sums, compulsory health insurance is an absolute failure to reduce the amount of sickness of workers.

Where are all these schemes leading to? What are the prospects for those entering the profession in large numbers today? Where are the potential possibilities for future discoveries? What then is panel medicine? It is medical terrorism. It is medicine blank and void of hope and endeavor.

Sir George Newman, former chief medical officer in the Ministry of Health, in the Sir Charles Hastings Lecture, 1928, said: "The organization of health, which is the organization of life, is the primary, though not the supreme business of the government, and, as I humbly see it, the supreme business of the government is to assist and to cultivate the health heritage of every reputable physician in every age. There should be no crossing of the medical bar, but hand in hand, the government should go forward with the doctors 'upon the prow of the ship of civilization' in the bitter battle against disease."

136 Market Street.

Association News

ANNUAL CONFERENCE OF SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS AND EDITORS OF STATE MEDICAL JOURNALS

The Annual Conference of Secretaries of Constituent State Medical Associations and Editors of State Medical Journals will be held in Chicago November 15 and 16. The first session will be convened at 10 a. m. Friday, November 15, and all meetings will be at the Palmer House.

Officers of state medical associations and county medical societies who wish to attend this conference will be heartily welcome, as will individual members of the Association who may desire to be present.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Trachoma Among the Indians.—Dr. Polk Richards, medical director of trachoma activities for the Indian Service, conducted a trachoma institute at Fort Apache, October 4-11, for all physicians and nurses in the U. S. Indian Service doing trachoma work. Dr. Phillips Thygeson, assistant professor of ophthalmology, State University of Iowa College of Medicine, Iowa City, was the guest speaker. The service maintains a special school at Fort Apache for children with trachoma. There is an eighteen bed hospital for acute cases and operative work in connection with the school, in which there are 275 pupils.

ARKANSAS

Meeting of Urologists.—The Southwestern branch of the American Urological Association will meet at Little Rock, November 15-16. Speakers will include:

Dr. Henry McClure Young, Columbia, Mo., The Best Surgical Approach to the Kidney.
Dr. Robert H. Akin, Oklahoma City, Transverse Urethral Bridging Following Prostatic Resection.
Dr. Samuel K. Broyles, Amarillo, Texas, Alkaline Incrustation of the Bladder.
Dr. Bransford Lewis, St. Louis, Nephropexy and Its Critics.
Dr. Julius Frischer, Kansas City, Mo., Preventive Measures in Urinary Calculus Formation.

CALIFORNIA

Society News.—At a meeting of the Alameda County Medical Society, Oakland, October 21, Drs. Dexter N. Richards and Olin H. Garrison, Oakland, spoke on "Intestinal Obstruction" and "Metabolic Diseases and Their Relation to Teeth," respectively.——Dr. Stanley H. Mentzer, San Francisco, discussed differential diagnosis of diseases of the gallbladder before the Solano County Medical Society, October 8, in Vallejo.——At a meeting of the Trudeau Society of Los Angeles, October 22, a symposium on pneumothorax treatment was presented by Drs. John Q. A. Scroggy, Carl R. Howson, John W. Nevius and John R. Neal.——Dr. Robert Sonnenschein, Chicago, addressed the Los Angeles Society of Ophthalmology and Otolaryngology, October 28, on reflexes or referred signs and symptoms of diseases of the nose, throat and ear.——At a meeting of the Los Angeles Surgical Society, October 18, Dr. Max M. Peet, Ann Arbor, Mich., spoke on "Surgical Treatment of Hypertension."——A joint meeting of the staff of Mills Memo-

rial Hospital, San Mateo, and the San Mateo County Medical Society was addressed, October 9, by Karl F. Meyer, Ph.D., San Francisco, on undulant fever. — Dr. Loyd Thompson spoke on "The Modern Renaissance of Syphilis" before the San Diego County Medical Society, October 8.

GEORGIA

University News. — The new Milton Antony contagious disease clinic of University Hospital and the University of Georgia Medical School was to be formally opened, October 1.

Dental Inspection of School Children. — About 16,000 school children in Fulton County will be inspected by members of the Fifth District Dental Association in a program of dental health recently begun by the association. In a similar project in the county last year in which 8,568 children were examined, the incidence of defective teeth was found to be 82.6 per cent, representing an average of 2.7 cavities per child, it was stated. The state and county health departments are cooperating in the project.

Society News.—Speakers before the Seventh District Medical Society at Chickamauga, recently, included Drs. John M. McGehee, Cedartown, on "Gonorrhea in the Male," and Henry L. Sams, Dalton, "Hygiene and Management of Pregnancy." — Dr. Herbert C. Schenck, Atlanta, among others, addressed the Eighth District Medical Society in Valdosta, October 8, on "Indications for Lung Collapse Measures in Tuberculosis, with Special Reference to Technic and Management in Artificial Pneumothorax." — At a meeting of the Second District Medical Society in Thomasville, October 11, Drs. James H. Pound, Chattahoochee, Fla., among others, spoke on "Surgery in the Mentally Ill," and Henry M. Moore, Thomasville, "Tobacco Amblyopia." — The Georgia Medical Society was addressed in Savannah, October 8, by Dr. Robert L. Oliver on "Metaplasia in the Breast," and Dr. Julian F. Chisholm Jr. presented a case report on "Tumor of the Optic Nerve." — Dr. Quinney A. Mulkey, Millen, addressed the Burke-Screven-Jenkins Counties Medical Society at Millen, October 3, among others, on "Treatment of Injuries to the Eye."

ILLINOIS

Personal.—Dr. Carl A. Peterson, Moline, has been named a district superintendent of health on the staff of the state health department, effective October 1. Moline will be his headquarters. — Dr. Harry A. Yeager has recently been appointed health officer of Litchfield.

Society News.—Dr. Harold B. Cushing, Montreal, Canada, among others, addressed the quarterly meeting of the Iowa and Illinois Central District Medical Association in Moline, October 18, on "Newer Phases of Prophylactic Inoculation in Children — Pertussis, Measles, Diphtheria, Poliomyelitis and Scariet Fever."—Dr. Charles F. Read, Elgin, among other speakers, discussed psychoanalysis before the Kane County Medical Society at a meeting, October 9, at the Elgin State Hospital.

Typhoid Traced to Contaminated Milk.—An outbreak of typhoid occurred at Grand Tower, Jackson County, during August, one month after a family reunion at which twelve persons were present; seven of the persons who attended the dinner were ill. The hostess recalled that she had bought from a dairy four quarts of raw milk from which she had made the ice cream. Milk from the dairy in question had gone to each household of thirteen other persons involved in a similar outbreak in the same community, with onset during July and August. The health department points out that while the investigation failed to identify definitely the source of contamination, evidence indicated that the milk was responsible. It is believed that a typhoid carrier or unrecognized case among the dairy help or customers was the original source. A young girl whose parents lived on the farm came home ill from Washington late in July. She had fever and was found to have typhoid when she entered a St. Louis hospital later for treatment of appendicitis.

Chicago

Society News.—Dr. David J. Davis, dean, University of Illinois School of Medicine, will deliver the presidential address before the Institute of Medicine of Chicago, December 3, on "Some Studies on the Epidemiology of Streptococcus Infections."

Dr. Pemberton Will Give Mayo Lecture. — Dr. John DeJ. Pemberton, associate professor of surgery, University of Minnesota Graduate School of Medicine, Rochester, will present the annual Mayo lecture of Northwestern University at Thorne Hall, November 15. Dr Pemberton's subject will be "Development of Thyroid Surgery."

Lectures at University of Illinois.—Dr. Alfred Adler, Vienna and New York, will lecture at the University of Illinois College of Medicine, November 4, on "Medical Psychology." Rear Admiral John Downes, commandant of the ninth naval district, Great Lakes, Ill., will deliver the Memorial Lecture at the university, November 11. The lecture has been endowed by alumni and faculty members of the school in memory of the alumni and members of the staff of the medical school who died during the World War.

Lectures on Psychoanalysis. — Dr. Franz G. Alexander opened a series of introductory lectures on psychoanalysis at the Institute for Psychoanalysis, October 24. The lectures are presented every Thursday afternoon. Subjects include historical development of the main concepts of psychoanalysis; concept of the unconscious; fundamentals of psychic dynamics (repression, regression, fixation, reaction-formation, sublimation); theory of instincts; development of the personality; general concepts of the structure of neuroses and psychoses; principles of the psychoanalytic technic, and application of psychoanalysis to other sciences.

INDIANA

State Medical Election.—Dr. Edmund D. Clark, Indianapolis, was chosen president-elect of the Indiana State Medical Association at its recent annual meeting in Gary. Dr. Roscoe L. Sensenich, South Bend, took office as president, succeeding Dr. Walter J. Leach, New Albany, who died just before the meeting. Memorial services were held for Dr. Leach during the meeting. Dr. Clark will take office Jan. 1, 1937. The next annual session will be held in South Bend. Dr. Clark graduated from Bellevue Hospital Medical College, New York, in 1891. He was director of base hospital number 32 during the World War and in 1931 was president of the Indianapolis Medical Society. At present he is secretary of the University of Indiana School of Medicine, Indianapolis, and professor of surgery.

IOWA

Society News.—At a meeting of the Iowa Clinical Surgical Society in Sioux City, September 28, clinics were conducted by Drs. Robert Q. Rowse and Prince E. Sawyer, general surgery; Archibald F. O'Donoghue, orthopedic surgery, and Lawrence E. Pierson, urologic surgery. — Speakers before the Dubuque County Medical Society in Dubuque, September 24, included Dr. Max Cutler, Chicago, on "Diagnosis and Treatment of Breast Tumors."

Immunization in Polk County. — State and local health authorities, parent-teacher associations and other agencies are cooperating in a campaign to immunize children in Polk County against diphtheria. It has been decided to devote one month each year to this campaign. This year it will begin in November. The campaign will be publicized by radio, newspapers and speeches. The Des Moines Council of Parent-Teachers Associations will do much of the educational work in the personal contact with parents.

Meeting of Ophthalmologists. — The Iowa Academy of Ophthalmology and Otolaryngology will hold its annual meeting in Council Bluffs, November 7, with the following speakers:

Dr. Frank W. Dean, Council Bluffs, Causes of Phorias.
Dr. Jack V. Treynor, Council Bluffs, Laryngotracheitis.
Dr. John F. Stageman, Council Bluffs, Asthmatic Bronchitis.
Dr. Wayland H. Maloy, Shenandoah, Tuberculosis of the Cornea and Iris.
Dr. Earl C. Montgomery, Atlantic, Serous Meningitis as a Complication of Acute Mastoiditis.
Dr. Lloyd G. Howard, Council Bluffs, Head Specialists.
Dr. Abbott M. Dean, Council Bluffs, Intra-Ocular Steel.
Dr. Sydner D. Maiden, Council Bluffs, Practical Management of Antrum Infection.

KENTUCKY

Advisory Committees on Social Security.—The governor has appointed an advisory commission on social security, with Dr. Arthur T. McCormack, secretary, Kentucky State Medical Association, as chairman. Dr. McCormack named several subcommittees to deal with the various titles of the Social Security Act. In addition, he has asked the committee on public relations of the state medical association to act as the committee on public health. The council of the state association and the committee on medical economics have been asked to serve as advisory members of the section of the commission dealing with all matters pertaining to health.

MAINE

Personal.—Dr. James A. Spalding, Portland, has retired as editor of the *Maine Medical Journal* and Dr. Edwin W. Gehring, Portland, has been named to succeed him.

105
935

MARYLAND

Personal.—Dr. Henry E. Sigerist, professor of the history of medicine, Johns Hopkins University School of Medicine, Baltimore, received an honorary degree from the College of Physicians of Madrid during the recent International Congress of the History of Medicine.——Dr. Robert E. Garrett, superintendent of the Spring Grove State Hospital, Catonsville, since 1928, has resigned, effective November 1, on account of ill health. Dr. Garrett has been connected with the institution for thirty-five years.

State Appointments for Health Survey.—William Thurber Fales, Sc.D., director of the bureau of vital statistics, Baltimore City Health Department, has been designated state supervisor for Maryland in the national health survey being conducted by the U. S. Public Health Service. Wilmer H. Schulze, Phar.D., director of the bureau of environmental hygiene, is serving as industrial hygiene specialist for the industrial survey of the records of sick benefit associations to determine sickness and death rates according to occupation. This material is intended to supplement the data gathered in the house-to-house canvass.

Causes of Death in 1934.—Accounting for 22 per cent of all deaths in Maryland in 1934, heart disease led the list of causes of death for the year. The mortality rates per hundred thousand of population for white persons and Negroes, respectively, were 264.9 and 265.8. Second in the causes of death was nephritis, with a rate of 127.5 per cent for white persons and 180.5 for Negroes. Cancer, all forms, was third, with a rate of 126.3 for white persons and 88.7 for Negroes. Tuberculosis, which was responsible for the greatest mortality from 1901 through 1917, stood seventh in the list of causes for 1934, having for the first time on record a death rate lower than that for accidents, which was sixth.

MASSACHUSETTS

Extension Lectures. — The Massachusetts State Medical Society has begun its series of graduate extension courses in various centers throughout the state. Different centers have been selected for the spring series. Consideration will be given to diseases of the lung, liver, kidney and bladder; cancer; arthritis; dermatology; ophthalmology and otolaryngology; pediatrics; immunology; latest developments in endocrinology, and syphilis and gonorrhea.

Mental Hygiene for Adults. — A university extension course on "keeping mentally fit" will begin, November 5, under the auspices of the Massachusetts Department of Education and the Massachusetts Society for Mental Hygiene. Sessions will be held at the Gardner Auditorium, State House, Boston, and lectures will be presented by the following:

Joseph Jastrow, Ph.D., New York, Keeping Mentally Fit, November 5.
Dr. Bronson Crothers, assistant professor of pediatrics, Harvard Medical School, Management of Disease in Childhood in Relation to Mental Health, November 12.
Dr. Lawson G. Lowrey, formerly director, Institute for Child Guidance, New York, The Child and the Modern World, November 19.
Dr. Donald Gregg, president, Massachusetts Society for Mental Hygiene, How Psychiatry Can Aid in Meeting Problems of Modern Life, December 3.
Dr. James J. Walsh, professor of physiologic psychology, Cathedral College, Current Ethical Trends, December 10.
Dr. Karl M. Bowman, assistant professor of psychiatry, Harvard Medical School, Adult Problems: "The Blues" and Fatigue States, December 17.
Dr. Jacob Kasanin, clinical director, state hospital for mental diseases, Howard, R. I., Psychoanalysis and Mental Health, January 7.
Dr. Albert Warren Stearns, dean, Tufts College Medical School, Adults in Difficulty, January 14.

Society News.—Dr. Charles S. Burwell, Boston, will address the Suffolk District Medical Society and the New England Heart Association at the Boston Medical Library, December 11, on "Constrictive Disease of the Pericardium."——At the annual meeting of the Massachusetts Psychiatric Society, October 29, George Sarton, Sc.D., associate of the Carnegie Institution of Washington, D. C., gave an address on "Genius, with Special Reference to Science and Music."——Dr. Harry B. Levine, among others, addressed the New England Heart Association in Boston, October 28, on "Pulmonary Infarction Complicating Severe Chronic Mitral Valve Disease with Failure."——Speakers before the Worcester District Medical Society in Rutland, October 9, were Drs. David Zacks, Brookline, on "X-Ray Diagnosis of Silicosis versus Tuberculosis," and Gulli Lindh Muller, Rutland, "Value of Blood Studies in the Selection of Cases for Thoracoplasty."——Dr. Robert A. Kilduffe, Atlantic City, N. J., discussed "Highlights in the History of Hospitals" before the Springfield Medical Society, October 28.——Dr. Leland S. McKittrick, Boston, addressed the New England Physical Therapy Society, Boston, October 16, on "Treatment of Hemorrhoids."

MICHIGAN

Board of Embalmers.—Members of the State Board of Embalmers and Funeral Directors, created by an act of the last legislature, have been appointed by Dr. Clyde C. Slemons, Lansing, state health commissioner. The board will work in conjunction with the state department of health.

Dr. Wessinger Honored.—Dr. John A. Wessinger, health officer of Ann Arbor since 1909, has been made a life member of the Washtenaw County Medical Society. A similar honor was conferred on Dr. Wessinger by the Michigan State Medical Society during its annual meeting in Sault Ste. Marie, September 27. Both honors were in recognition of his many years as a practicing physician. Dr. Wessinger is 75 years of age and a graduate of Detroit Medical College, class of 1882.

Society News.—The Kalamazoo Academy of Medicine was addressed in Kalamazoo, October 22, by Drs. Raymond W. Waggoner, Ann Arbor, on "The Paroxysmal Disorders"; Richard M. McKean, Detroit, "Disturbances in Thyroid Function"; Harley A. Sears, Kalamazoo, "Endocrine Therapy in Schizophrenia," and Roy A. Morter, Kalamazoo, "The Problem of Mental Disorders."——A symposium on anesthesia will be presented before the Wayne County Medical Society, November 4, by Drs. Myra E. Babcock and Francis J. Murphy, Detroit. Dr. Rosco G. Leland, director, Bureau of Economics, American Medical Association, Chicago, discussed "The Economics of Modern Medicine" before the society, October 21.——The Detroit Society of Neurology and Psychiatry held its first annual meeting at Ann Arbor, September 19; speakers included Dr. Konstantin Lowenberg, Ann Arbor, on "Cerebral Changes in Nitrous Oxide Deaths."——The house of delegates of the Michigan State Medical Society adopted a resolution during the recent annual meeting establishing a section on radiology.

MISSOURI

Society News.—Dr. Thomas FitzHugh Jr., Philadelphia, discussed "Recent Advances in Clinical Hematology" before the Kansas City Academy of Medicine, October 18.——Speakers before the second annual meeting of the Missouri Academy of Science in Kansas City, October 24-26, included Dr. Buford G. Hamilton on "What Maternal Welfare Hopes to Accomplish in the State of Missouri."

Medical-Dental Service Bureau. — Offices for the new Medical-Dental Service Bureau have been established in St. Louis at 317 Missouri Building. Mr. Ross Garrett, director of a similar bureau in Washington, D. C., is in charge of the organization. Representatives have been chosen from the three societies participating in the plan to make up a board of directors: for the St. Louis Medical Society: Drs. Fred W. Bailey, David P. Barr, Howard M. Foster, Curtis H. Lohr, John C. Morfit, James Archer O'Reilly, Major G. Seelig, Carl F. Vohs, Thomas C. Wimber and William O. Winter; for the St. Louis County Medical Society: Dr. Elmer O. Breckenridge; for the St. Louis Dental Society: Drs. Otto W. Brandhorst, Val H. Frederich, Virgil Loeb, Edward L. Mayer, Ronald H. Miller and Rudolph C. Seibert.

NEW JERSEY

Health at Trenton. — Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended October 19, indicate that the highest mortality rate (17.6) appears for Trenton and that the rate for the group of cities as a whole was 11. The mortality rate for Trenton for the corresponding week of last year was 14.6 and that for the group of cities, 10.9. The annual rate for the eighty-six cities for the forty-two weeks of 1935 was 11.4, as against a rate of 11.3 for the corresponding period of 1934. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

NEW YORK

Hospital News.—Two new buildings were dedicated at the Suffolk Sanatorium, Holtsville, October 23. One is for children, has a capacity of sixty and is named for the late Dr. Joseph H. Marshall, first president of the board of managers of the hospital. The other building, which has fifty-four beds, is for the care of acute cases; it is named for Dr. William H. Ross, Brentwood, first president of the county board of health.

Dr. Greenburg Appointed Director of Industrial Hygiene. — Dr. Leonard Greenburg, health officer of New Haven, Conn., has been appointed executive director of the division of industrial hygiene of the state department of labor,

effective October 15. Dr. Greenburg, who is a native of New York, received a degree in sanitary engineering from Columbia University in 1915, the doctorate in public health from Yale University, New Haven, in 1923 and his medical degree from Yale in 1930. He has served as an officer of various sections of the National Safety Council dealing with industrial hazards, as a member of a committee to investigate sanitary conditions at Ellis Island and as a member of a committee studying cerebral meningitis and sanitary conditions on shipboard and in the Orient in 1931. He is associate clinical professor of public health at Yale University School of Medicine. He will begin immediately a study of silicosis and other dust disease hazards in industry in connection with the new workmen's compensation law.

New York City

Afternoon Lectures at the Academy.—The tenth series of Friday afternoon lectures at the New York Academy of Medicine will begin November 8 with a talk by Dr. Milton Benjamin Rosenbluth on "Newer Drug Therapy." Lecturers for the remainder of the year will be:

Dr. Thomas T. Mackie, Diagnosis and Treatment of Intestinal Infections.
Dr. Emanuel Libman, Points in Medical Diagnosis.
Dr. William P. Healy, Significance of Uterine Bleeding in Later Life.
Dr. George Draper, Significance of the Human Constitution in Clinical Medicine.
Dr. Ralph Pemberton, Philadelphia, Present Status of Arthritis and the Treatment of It.

Dr. Erdmann Honored.—A new auditorium at the New York Post-Graduate Medical School and Hospital has been named in honor of Dr. John F. Erdmann, who was professor of surgery in the school and director of the surgical service for more than twenty years. At a dedication ceremony, October 21, speakers included Drs. Walter G. Lough, Walter T. Dannreuther, Raymond B. Allen, William B. Talbot, Charles Gordon Heyd and Arthur F. Chace. Dr. Charles J. Imperatori, who is chairman of the faculty association, presided and Dr. Chace accepted the Erdmann Auditorium, which is a gift from the board of directors, the faculty association and the professional staff of the hospital in recognition of Dr. Erdmann's long services to the institution. Dr. Erdmann spoke briefly in acknowledgment. A bronze bust of Dr. Erdmann, the gift of the faculty association, also was installed.

Dr. Emerson Awarded Medal.—The American Public Health Association at its annual meeting in Milwaukee, October 7, awarded the William Thompson Sedgwick Medal for distinguished service in public health to Dr. Haven Emerson, president of the association in 1933-1934. Dr. Emerson has been since 1922 professor of public health administration and director of the institute of public health at Columbia University College of Physicians and Surgeons, from which he was graduated in 1899. At various times he has served as professor of hygiene and preventive medicine at Cornell University Medical College, health commissioner of New York City and medical adviser and assistant director of the bureau of war risk insurance in the U. S. Treasury Department. In 1929 he made a survey of health and sanitation in Athens, Greece, for the health section of the League of Nations and has made similar surveys for many cities in this country. He served in the medical corps of the army during the World War and received the Distinguished Service Medal.

OHIO

University News.—The International Health Division of the Rockefeller Foundation has granted to the school of applied social sciences of Western Reserve University, Cleveland, $10,000 to strengthen the public health nursing practicing field for graduate and undergraduate nursing students.

State Medical Election.—Dr. Edwin M. Huston, Dayton, was named president-elect of the Ohio State Medical Association at the annual meeting in Cincinnati, October 4, and Dr. Ralph R. Hendershott, Tiffin, was installed as president. Next year's meeting will be in Cleveland. Dr. Huston was graduated from the Medical College of Ohio, Cincinnati, in 1896.

Society News.—A program of graduate lectures will be presented by the Summit County Medical Society, Akron, November 7. Speakers will be Drs. William Wayne Babcock, Philadelphia, who will discuss "Malignant Disease of the Intestine" and "Common Errors in Surgical Practice"; Temple S. Fay, Philadelphia, "Important Considerations in the Administration of Fluids" and "Cerebral Injuries and Management of Intracranial Pressure Problems"; and John A. Kolmer, Philadelphia, "Vaccination Against Infantile Paralysis" and "Principles and Practical Applications of Chemotherapy."——Dr. Grover C. Penberthy, Detroit, addressed the Toledo Academy of Medicine, October 4, on "Tannic Acid Treatment of Burns." Dr. Stanley M. Goldhamer, Ann Arbor, Mich., addressed the section on pathology, experimental medicine and bacteriology, October 11, on "Physiology and Treatment of the Macrocytic Anemias."——Dr. Elias C. Fischbein, Dayton, addressed the Montgomery County Medical Society, Dayton, November 1, on "Modern Conceptions of the Neuroses."

PENNSYLVANIA

Society News.—Dr. James W. McConnell, Philadelphia, addressed the Northampton County Medical Society at Easton in September on "The Close Interrelationship of Medicine and Neuropsychiatry."——Dr. Charles L. Brown, Philadelphia, discussed differential diagnosis of fever at a meeting of the Berks County Medical Society, Reading, October 8.——Dr. Arthur M. Shipley, Baltimore, was guest speaker at the annual meeting of the Cumberland County Medical Society at Carlisle in September; his subject was "Surgery Related to Blood Vessel Diseases."

Philadelphia

Society News.—A medicolegal symposium was presented before the Philadelphia County Medical Society at its meeting, October 23, by Drs. Daniel J. McCarthy, Charles W. Burr, William Drayton Jr. and Samuel Leopold and Judge Charles Brown, president of the board of judges. The October 16 meeting was a memorial to the late Dr. George A. Knowles, a bronze bust of whom was presented to the society. Dr. Knowles, who died in 1934, was assistant director of health of Philadelphia.——Among other speakers before the Physiological Society of Philadelphia, October 21, Dr. David L. Drabkin, Mr. A. H. Widerman and Mr. H. Landow presented a paper on "The Fate of Hemoglobin Injected into the Animal Body."——Dr. John F. Fulton, New Haven, Conn., was guest speaker at a meeting of the Philadelphia Neurological Society, October 25; his subject was "Recent Experiments on Relation of Frontal Lobes to Cerebellum."

Hospital Survey.—In the preliminary report of a survey completed by Harold T. Prentzel, the occupancy of Philadelphia's 19,959 hospital beds is said to have averaged 75.3 per cent in 1934. The report shows that in forty-nine hospitals 50 per cent of the private beds were occupied and 83.4 per cent of the ward beds. Seventy per cent of the unoccupied beds in the city were in the forty general hospitals, which have 57.1 per cent of the total number of beds. Fourteen special hospitals having 12.5 per cent of the beds had an occupancy of only 44.4 per cent. The new U. S. Naval Hospital was only 32.8 per cent occupied during the year. Considering all types of beds, the ratio of beds to population in Philadelphia was 10.23 beds per thousand; excluding all special beds, the ratio was 5.84. The investigator concluded that the hospitals with less than 100 beds should be closed or merged with larger hospitals except when they are valuable in serving small communities; that the church hospitals are in unfavorable positions to meet the needs of their constituencies and should meet their environmental conditions, remove to new locations or reduce their capacities; that the centrally located hospitals may have to move or retire from the field; that corporations organized for profit are an economic burden to the public, and that the gap between the use of private and of ward services indicates the necessity for lower cost private service.

Pittsburgh

Society News.—Dr. Henry M. Ray, Pittsburgh, among others, addressed the Pittsburgh Academy of Medicine, October 22, on "Blood Grouping: Clinical and Medicolegal Applications."——Drs. Ira A. Darling, Warren, and Edward E. Mayer addressed the Pittsburgh Neurological Society, October 21, on "Hospital Treatment of Inebriates" and "Nonpsychotic Conduct Disorders," respectively.

WASHINGTON

Smallpox Increasing.—The state health officer reported that Washington had 1,014 cases of smallpox in the first nine months of this year. In 1934 there were 580 cases in the state and in 1933 there were 288.

WEST VIRGINIA

Personal.—Dr. Frederick T. Foard of the U. S. Public Health Service, who has been in charge of a sanitation program conducted by the state health department and the emergency relief administration, has been transferred to San Francisco. Dr. Albert M. Price of the health department will take charge of the sanitation work.

State Health Conference.—The annual state health conference was held in Huntington, October 28-30, at the Hotel Prichard. Among the speakers were Drs. Iago Galdston, New

105
935

York, on "Health Promotion by Education"; Paul Padget, Baltimore, "Modern Treatment of Syphilis"; Henry Kennon Dunham, Cincinnati, "Is Tuberculosis Still a Health Problem?" and Allen W. Freeman, Baltimore, "The Future of Public Health."

Society News.—Dr. Richard B. Cattell, Boston, addressed the Ohio County Medical Society, Wheeling, October 25, on "Carcinoma of the Colon and Rectum." Dr. William F. Rienhoff Jr., Baltimore, addressed the society, October 11, on "Surgical Treatment of Diseases of the Lungs and Mediastinum." —— Dr. William Wayne Babcock, Philadelphia, addressed the Fayette County Medical Society, Oak Hill, September 28, on "Tumors of the Intestinal Tract."

WISCONSIN

Hobby Exhibit at State Meeting.—The Medical Society of Milwaukee County and its Woman's Auxiliary sponsored an exhibit of physicians' hobbies at the annual meeting of the State Medical Society of Wisconsin in Milwaukee recently. Forty-four physicians displayed the following leisure time activities: boat models, photography, collections of rare books, sculpture, sketching, metalcraft, electrical and chemical patents, stamps, butterflies, flowers, a collection of Negro spirituals, third dimension photography and a short wave radio transmitter. The exhibit will be continued at future meetings of the state society.

Society News.—Drs. Albert W. Bryan and Jerome T. Jerome, Madison, addressed the Chippewa County Medical Society, Chippewa Falls, September 25, on "Cardiac Lesions and Their Treatment" and "Injuries and Diseases of the Knee Joint," respectively. —— Drs. Arthur W. Allen, Boston, and Joseph J. Adamkiewicz addressed the Milwaukee Society of Clinical Surgery, October 22, on "Present-Day Treatment of Head Injuries" and "Common Duct Stones—Their Diagnosis and Treatment," respectively.——Dr. Francis D. Murphy, Milwaukee, was the guest speaker in a symposium on cardiac diseases at a meeting of the First Councilor District of the State Medical Society of Wisconsin in Watertown, October 24.

GENERAL

Southwestern Meeting at El Paso.—The twenty-second annual meeting of the Medical and Surgical Association of the Southwest will be held at the Hotel Hussmann, El Paso, November 21-23. Guest speakers, each of whom will make several addresses and conduct clinics and round table discussions, will be Drs. Charles T. Stone, Galveston, Texas; Verne C. Hunt, Los Angeles; Enos Paul Cook, San Jose, Calif.; James C. Masson and Louis A. Buie, Rochester, Minn.; Hermon C. Bumpus Jr., Pasadena; Isaac H. Jones, Los Angeles, and Albert H. Rowe, Oakland, Calif.

Meeting of Railway Surgeons.—The American Association of Railway Surgeons will hold its annual meeting at the Palmer House, Chicago, November 13-15. The tentative program includes the following speakers:

Dr. George W. Hall, Chicago, Mental Reactions Following Trauma.
Dr. James E. M. Thomson, Lincoln, Neb., Fractures of the Forearm.
Dr. Edward L. Jenkinson, Chicago, Anatomic Variations of the Spine.
Dr. Owen H. Wangensteen, Minneapolis, Abdominal Injuries.
Dr. George H. Ewell, Madison, Hydrocele, Its Treatment by the Injection Method.
Dr. Philip H. Kreuscher, Chicago, Fractures of the Pelvis and Upper End of the Femur.

Dr. James Tate Mason, Seattle, President-Elect, American Medical Association, will discuss "Practical Considerations on Intravenous Fluids in Shock, Dehydration and Starvation."

Pacific Coast Obstetric Meeting.—The Pacific Coast Society of Obstetrics and Gynecology will hold its annual meeting in Los Angeles, November 6-9, at the Ambassador Hotel. Speakers will include:

Dr. Philip H. Arnot, San Francisco, Morbidity, Mortality and Complications After Cesarean Section.
Dr. Herbert M. Evans, Berkeley, Relation of the Anterior Pituitary to the Reproductive Process.
Dr. Sterling N. Pierce, Los Angeles, Pseudojaundice of the New-Born.

A symposium on maternal mortality of seven cities on the Pacific Coast will be presented by Drs. Thomas Floyd Bell, Oakland; Richard J. O'Shea, Seattle; Raymond E. Watkins, Portland, Ore.; Henry A. Stephenson, San Francisco; Clarence W. Page, Berkeley; William Benbow Thompson, Los Angeles, and Thomas F. Wier, San Diego.

The Woman's Auxiliary.—The October *News Letter* of the Woman's Auxiliary to the American Medical Association states that in Milwaukee, radio station WTMJ canceled all contracts carrying the radio advertising of internal "patent medicines," an action for which praise is given to the auxiliary of the Medical Society of Milwaukee County. Since the state medical society's approval at the recent annual meeting, a state organizer in North Dakota is now under consideration, leaving Ohio and Montana the only unorganized states in the north central area. A pilgrimage is being planned in Indiana to visit and care for the graves of the two women who are considered the first in the world to be operated on for an ovarian tumor and disease of the gallbladder; Dr. Ephraim McDowell, Danville, Ky., performed the ovariotomy on Jane Todd Crawford, who later lived and is buried in Sullivan, Ind. The second operation was performed by Dr. John Stough Bobbs, June 15, 1867, in Indianapolis, on Mrs. Burasworth, McCordsville. The pilgrimage will also include a visit to the grave of Dr. John L. Richmond, who lived in Indiana and was buried in Covington.

Society News.—Dr. Claude W. Munger, director, Grasslands Hospital, Valhalla, N. Y., was chosen president-elect of the American Hospital Association at its meeting in St. Louis, September 30-October 4, and Dr. Robin C. Buerki, superintendent, State University of Wisconsin General Hospital, Madison, was installed as president. Dr. Bert W. Caldwell, executive secretary of the association, was designated editor of the society's official journal, *American Hospitals*.——The National Society for the Prevention of Blindness will hold its annual conference at the headquarters of the society in Rockefeller Center, New York, December 5-7. Among topics to be discussed will be medical social eye work, prevention of eye accidents caused by fireworks, and division of responsibility between official and unofficial agencies in the movement for prevention of blindness.——The sixteenth annual meeting of the American Student Health Association will be held, December 27-28, at the Hotel Pennsylvania, New York. ——Dr. Clyde C. Slemons, Lansing, Mich., was elected president of the International Society of Medical Health Officers at the annual meeting in Milwaukee in October.——Dr. John F. Erdmann, New York, was chosen president-elect of the Inter-State Postgraduate Medical Association at the annual session in Detroit, October 18, and Dr. David Riesman, Philadelphia, was installed as president.——At the seventh annual meeting of the Central Association of Obstetricians and Gynecologists in Omaha, October 10-12, Dr. Jean Paul Pratt, Detroit, was chosen president-elect; Dr. Buford G. Hamilton, Kansas City, Mo., was installed as president. Other officers are Drs. James R. Garber, Birmingham, Ala., and Ralph A. Reis, Chicago, vice president and secretary-treasurer, respectively. The next annual meeting will be held in Detroit.

FOREIGN

Scientific Medicine in China.—At the annual meeting of the Chinese Medical Association, November 1-8, in Canton, the one hundredth anniversary of scientific medicine in China will be celebrated. The meeting will be held at Canton Hospital, where Dr. Peter Parker, a medical missionary, first introduced western medicine into the country. A centennial history of the hospital is now in process of publication. A new building for the hospital will be dedicated during the meeting and the foundation stone for a new medical school will be laid.

Society News.—At the Seventh International Congress of Industrial Accidents and Occupational Disease at Brussels in July Dr. Francis D. Donoghue, Boston, was elected vice president and Dr. Robert T. Legge, Berkeley, Calif., a member of the permanent committee. Papers were presented by Drs. Henry H. Kessler, Newark, N. J., Royd R. Sayers of the U. S. Public Health Service, Washington, D. C., and Yandell Henderson, Ph.D., New Haven, Conn., among others. The United States delegation was headed by Dr. Claude C. Pierce of the U. S. Public Health Service.——A "Congress on Gout and Uric Acid" was held in Vittel, France, September 14-16. Dr. Hyman I. Goldstein, Camden, N. J., presented a paper on "Gout and the Uric Diathesis."

Nobel Prize in Medicine Awarded to German Scientist.—Dr. Hans Spemann, professor of zoology at the University of Freiburg im Breisgau, has received the Nobel Prize in Medicine for 1935 in recognition of his research on embryonic evolution, the New York *Times* reported, October 25. Dr. Spemann is a native of Stuttgart, 66 years old, and studied medicine at the universities of Heidelberg, Munich and Würzburg. He was appointed assistant at the Zoological Institute at Würzburg in 1895 and taught there until 1908, when he was called to the University of Rostock. In 1914 he became director of the Kaiser Wilhelm Institute for Biology in Berlin-Dahlem and was appointed to his present position at Freiburg in 1919. His best known scientific work is entitled "Experimental Research in the Field of Evolutionary Physiology." He is also the author of a manual on the technic of microsurgery. In 1933 he was a guest lecturer at Yale University, New Haven, for two weeks.

V 1
193

Government Services

Animal House Planned

The advisory committee on architectural design of the U. S. Treasury Department has approved a plan for a scientific animal house to be erected for the National Institute of Health on a forty-five acre farm near Bethesda, Md. This site will be developed into an experimental station for the institute under an appropriation of $100,000, which has been available for some time. The farm was donated by Luke Wilson, retired business man, formerly of Evanston, Ill., from a part of his estate, Tree Tops, on the Rockville pike north of Bethesda.

Memorial to Colonel Hoff

A fountain erected in the circle opposite the main entrance to Walter Reed Hospital, Washington, D. C., was dedicated, October 25, as a memorial to Col. John Van Rensselaer Hoff, medical corps, U. S. Army, who died in 1920. Colonel Hoff was graduated from Albany Medical College in 1871 and from the College of Physicians and Surgeons in the City of New York in 1874. He organized the first detachment of the hospital corps in the army at Fort Reno, I. T., in 1887, and the first company of instruction hospital corps at Fort Riley, Kan., in 1891. He served through the war with Spain and was chief surgeon of the China relief expedition in August 1900. He was a member of the faculty of the Army Medical School in 1901 and 1902, in 1905 was detailed as observer with the Russian army in the Russo-Japanese war, in 1906 was chief surgeon of the Department of Missouri, in 1907 and 1908 chief surgeon of the Philippines division, in 1909 chief surgeon of the Department of the Lakes, and from 1910 until his retirement for age in 1912 chief surgeon of the Department of the East and Eastern Division.

Examination for Reserve Corps of Public Health Service

The U. S. Public Health Service announces an examination for entrance into the Reserve Corps of the U. S. Public Health Service in the grade of assistant surgeon, to be held November 18. Boards will be appointed in various cities so as to avoid the necessity for travel, which if necessary must be made at the candidate's expense. Applicants must have graduated from reputable medical colleges and must have had at least one year's internship. They must not have passed their thirtieth birthday. Compensation will be $3,158 per year for an officer with dependents, $2,699 for one without dependents. Successful candidates will be ordered to active duty in the Reserve Corps, in which it is expected there will be vacancies soon after Jan. 1, 1936; they will be eligible for examination for entrance into the regular corps when such examinations are held, provided they have not passed their thirty-second birthday. Those who wish to take this examination should request the necessary blanks and other information from the Surgeon General, U. S. Public Health Service, Washington, D. C.

Captain Brister Named Rear Admiral

Promotion of Capt. John Mosley Brister, medical corps, U. S. Navy, to the grade of rear admiral, was approved by the President, October 21. The promotion will be effective January 1, when Rear Admiral Ammen Farenholt will retire, having reached the statutory retirement age of 64 years. Rear Admiral Farenholt is inspector of medical department activities, West Coast, with headquarters at the Naval Hospital in San Diego, Calif. Captain Brister was born in Pennsylvania May 24, 1877, and graduated from the Medico-Chirurgical College of Philadelphia in 1898. He was appointed an assistant surgeon in the medical corps of the navy in 1900. After several years' service on the Asiatic Station and in the Philippines, he returned to the United States for duty at the Philadelphia Naval Hospital. During the World War he was attached to the naval hospital, Boston, and in 1919 and 1920 was in command of the naval hospital, Canacae, P. I. He returned to the Boston Naval Hospital in 1921 and in 1923 was transferred to the Naval Hospital at New York. He served as fleet surgeon and aide on the staff of the commander, battle force, during 1925 and 1926 and was attached to the bureau of medicine and surgery from 1927 until 1929. He was in command of the Boston Naval Hospital from 1929 until 1933, when he was assigned to his present duties as district medical officer of the fourth naval district, Philadelphia.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 5, 1935.

The Future of Biochemistry and Pharmacy

At the ninety-fourth session of the School of the Pharmaceutical Society, Sir Frederick Gowland Hopkins, president of the Royal Society and professor of biochemistry at the University of Cambridge, delivered an address on the training of the pharmacist, a subject on which no one else can speak with so much authority. Knowledge concerning the control of the body by a multiplicity of hormones, with complicated interrelations, he said, was growing daily, and the literature of research on vitamins had of late contained as many as 1,000 papers in one year. Only a specialist could deal with such an output. But the fact that substances of the kind were intruding into therapeutics in such an overwhelming way made it desirable that the pharmacist should be aware of the essential facts relating to their origin, distribution and action, and should be fully acquainted with their chemical properties. For this reason he thought that the introduction of animal physiology into the courses of the college was timely. Biochemistry was fast acquiring methods that enabled it to follow the progress of the invisible molecular events occurring in the living tissues. It was progressing on lines that would enable it in the perhaps somewhat distant future to describe in detail the numerous chemical reactions proceeding in ordered sequence in every living tissue cell.

Speaking of the future of pharmaceutic progress, Sir Frederick Hopkins said that it was difficult for those who served the public to avoid supplying it with what it demanded. The public today, and not its humbler sections alone, was for the most part too ignorant to be protected from the influence of advertisements incessantly before its eyes, which proclaimed the supposed merits of a crowd of quack nostrums or expensive proprietary articles of little real value. Many pharmacists did their best to protect it from these, and committees were in existence which were considering remedies for the evil. But the problem of combating it, whether by state action or otherwise, was extremely difficult. However, biologic science was gaining a footing in general education. It was beginning in the schools and was increasing its influence in the universities. The time was not far distant when even average members of the community would know much more about their bodies and their bodily functions than they knew today and would no longer display the faith that was born of ignorance.

A Criticism of Freud

In introducing a series of broadcast addresses on social problems from the point of view of a psychoanalyst, Dr. W. R. Inge, formerly dean of St. Paul's, a man remarkable for the breadth and originality of his views, said that Freud seemed to him to give us psychology without a psyche and to pay too much attention to morbid states instead of investigating the healthy mind. Freud suffered himself from an obsession about sex and this was a misfortune, because there was a tendency to exaggerate enormously the place which sex played in a normal healthy life. Most people thought far more about their work and their play, about earning money and spending it, about their families and friends, than they did about sex. Lastly, Freud was wrong in regarding religion as an illusion. His rival Jung was wiser, since he saw that religious faith was a cure in many neurotic cases. Man, who began as an ape afflicted with megalomania, was now essentially a savage who fancied himself civilized. He called himself Homo sapiens, a title which he had done little to earn. Modern man had an almost fatal shock. He looked within himself and found some

105
935

very ugly inmates—an earlier psychology would call them evil spirits. Freud taught us to find there only "whited sepulchers full of dead men's bones and all uncleanness." Had not saints known that always a psychoneurotic who could say from his heart "I believe in the Holy Spirit" would often get rid of his trouble really and not in imagination? All this evil heritage could be got rid of by the indwelling presence of the spirit of God.

Vitamin Deficiency and Anemia

In the recent extensive literature on the organic and inorganic food factors influencing the formation of hemoglobin, the part played by vitamins has been largely overlooked. At the Royal Infirmary, Edinburgh, D. Melville Dunlop and Harold Scarborough have shown the specific effect of cevitamic acid in the anemia of scurvy. That anemia occurs in scurvy is well known, but until recently it was regarded as due simply to the undernutrition and the hemorrhages, though increased blood destruction has been suggested as an additional factor. But Mettier, Minot and Townsend (Scurvy in Adults, THE JOURNAL, Oct. 11, 1930, p. 1089) found that a reticulocyte response could be induced in scorbutic anemia by administering orange juice and suggested that the anemia of scurvy was largely due to prolonged lack of vitamin C affecting the function of the bone marrow. More recently Mettier and Chew have produced evidence that the anemia of experimental scurvy in the guinea-pig is largely dependent on retardation of the maturation of erythrocytes in the bone marrow consequent on a vitamin C deficiency and that orange juice produces a reticulocyte response.

Dunlop and Scarborough studied two cases of scurvy in man (*Edinburgh M. J.* **42**:476 [Sept.] 1935). In one the patient was a man, aged 54, who had been unemployed for a long time and for one and one-half years before admission to a hospital had an income of only $4 a week, of which he spent $1.50 on his diet. This consisted of bread, margarine, treacle, corned beef or smoked sausage, cheese, and tea made with sugar and canned milk. In the one and one-half years he had never taken fresh vegetables, potatoes, fresh milk or fresh fruit. He felt in poor health and two months before admission noticed numbness in his legs and pains in his knees and calves. About this time his gums became swollen and bled easily. These symptoms progressed, and his legs became intensely painful on walking. Five days before admission he was so incapacitated that he had to go to bed. On admission there were subcutaneous hemorrhages in the lower limbs and pin-point ecchymoses over the abdomen. He was given a diet exactly similar to what he had been taking. Its daily iron content was found to be only 10.2 mg., so that there was considerable iron deficiency. He was given orally 60 mg. of cevitamic acid daily (equivalent to 3 ounces, or 90 cc., of orange juice) for seventeen days. In this period the red blood corpuscles increased from 2,050,000 to 4,226,000 and the hemoglobin from 45 to 77 per cent. After this he continued on the same deficient diet and no cevitamic acid was given, yet in eleven weeks the corpuscles increased to 5,600,000 and the hemoglobin to 100 per cent. Two days after he began taking the cevitamic acid the pain in the legs was better and three days still later the hemorrhages and other symptoms were receding. Within a fortnight he felt well. After he stopped taking the cevitamic acid the improvement continued for ten weeks. This case shows that cevitamic acid is capable of exerting its beneficial effects for long periods after its administration. The increase of the hemoglobin, in spite of the iron-poor diet, is also noteworthy. Dunlop and Scarborough suggest that a deficiency of vitamin C in a diet may be a factor in producing anemia in working class populations even in the absence of symptoms of scurvy.

H. W. Dudley, Biologist

Harold Ward Dudley, Ph.D., F.R.S., a distinguished biochemist, has died at the age of 47 after a short illness. Educated at Leeds University, he came under the influence of the late Prof. J. B. Cohen and in 1910 took the degree of M.Sc. In the same year he was awarded a science research scholarship and worked in Emil Fischer's laboratory in Berlin with Professor Traube on purine. He next became assistant in the Herter Laboratory, New York, where he came under the influence of H. D. Dakin. At this time physiologic chemistry was undergoing metamorphosis into biologic chemistry, to which he devoted his life. In collaboration with Dakin he did much original work, comprising the discovery of the enzyme glyoxalase and certain fundamental observations on the racemization of proteins. In 1914-1915 he was lecturer on biochemistry at Leeds University and on the outbreak of the war was attached to the Royal Army Medical College for special chemical work. In 1918 he was in charge of the antigas mission to the United States. After the war he became chief biochemist to the Medical Research Council. At the council's laboratory he made contributions to biochemistry, including work on the chemistry of the pituitary secretions, insulin, spermine, acetylcholine, histamine and ergometrine. He was secretary of the Biochemical Society from 1922 to 1924 and joint editor of the *Biochemical Journal*. His premature death is a great loss to science.

PARIS

(From Our Regular Correspondent)

Sept. 30, 1935.

Prophylaxis of Undulant Fever

At the July 9 meeting of the Academy of Medicine, attention was directed by Barbary of Nice to the necessity of close cooperation of the services of hygiene and veterinary medicine in order to prevent undulant fever. One should remember that, according to recent studies, many new views have been adopted on the two diseases grouped under the heading brucellosis; viz., Malta or undulant fever, due to Micrococcus melitensis, and the epizootic abortion of cattle due to the Bacillus abortus of Bang. It is essential to familiarize the farmer and cattle raiser, by talks and by pamphlets, with the possibility of contagion, not only through cow's or goat's milk (which can be sterilized by boiling) but also with the danger of infection from manure and insanitary conditions in stables and cow sheds. Villages should be subjected to thorough sanitary inspection such as proper sewage disposal, cleaner streets and stables, and fighting of insects, especially mosquitoes. Any one who has visited rural communities in European countries, especially in France, will appreciate the necessity of such sanitary reform measures.

Certain forms of tuberculosis, studied by Dr. Mazet, can present a clinical picture resembling that of undulant fever.

In order to discover cases of brucellosis, the intradermal reaction with the specific antigen represented by an emulsion of Brucella abortus should be used as a routine for cattle, sheep and goats in order to combat undulant fever. Experiments are now being carried out toward attaining a preventive vaccination in human beings.

The Abdominal Form of Migraine in Children

Migraine is seen clinically in young children oftener than in adults, disappearing as a rule at puberty. A history of similar attacks in the child's family is of much diagnostic importance. The pain is referred to the left or right side of the forehead and in older children is accompanied by nausea and vomiting. In the *Bulletin médical*, July 6, Debré and Broca directed attention to the fact that abdominal pain may dominate the clinical picture of the attack of migraine. The

pain is referred to the epigastrium and is accompanied by nausea or vomiting in most cases. The pain may, however, be diffuse, in the form of colics. In the absence of a history of migraine, the diagnosis is difficult. The painful attacks referred to the head may become less frequent, to become more and more abdominal. At times the abdominal form of migraine begins suddenly without a history of a preceding cephalic pain.

The attacks of both cephalic and abdominal migraine end as abruptly as they have begun. A rise of temperature should lead one to question the existence of an abdominal migraine. One must exclude the presence of a tuberculous meningitis, a tumor of the brain, a meningeal hemorrhage and a frontal sinusitis, in cases of the cephalic type of migraine. An appendicitis must be excluded by the less diffuse character of the pain, the absence of muscular rigidity, fever and rise in pulse rate in abdominal migraine. Cyclic vomiting with acetonemia in children presents as the chief symptom the uncontrollable emesis, which ceases suddenly. The authors have, however, observed cases of a combination of abdominal migraine and cyclic vomiting with acetonemia. In a family, an abdominal migraine was found in one child and cyclic vomiting in another. The frequency of migraine in children must be constantly borne in mind. The abdominal form may be mistaken for a condition requiring operative intervention.

Streets Named After Eminent Physicians

It is the custom in French cities to name streets after distinguished citizens. Recently this method of perpetuating the memory of men in the medical profession who have rendered noteworthy services to their fellow citizens has been applied to three streets in Paris, named respectively after Grancher, late professor of pediatrics, Dejerine, the successor of Charcot, and Emile Roux, the former director of the Institut Pasteur.

Bactericidal Action of Carbon Dioxide Gas

The question has arisen recently as to whether carbon dioxide gas can be employed to sterilize water to be used for drinking. To study the problem, Guillerd and Lieffrig allowed a current of carbon dioxide gas to pass through contaminated water for variable periods in order to observe its effects on the bacterial content. Their results were reported at the June 18 meeting of the Academy of Medicine. The rate of flow of the gas was controlled by a manometer. Contrary to certain claims of a bactericidal action of carbon dioxide gas on bacteria in water, the authors found that even when the water is saturated and the gas is allowed to act during a period from thirty minutes to an hour neither colon nor typhoid bacilli are killed.

Birth Rate Continues Downward in France

The excess of deaths over births in the first three months of 1935 has reached the figure of 33,456. During this period only 166,590 births were registered, 10,373 less than in the corresponding period of 1934 and 23,123 less than in the first quarter of 1932.

On the other hand, the number of deaths has increased to 200,046, or 10,802 more than in the first three months of 1934. Of these deaths in 1935, 13,989 were those of infants less than one year old. This is an increase of 398 in spite of the decreased number of births.

The excess of deaths over births during the first three months of 1934 was only 12,282, whereas in the same period of 1935 it is 33,456. This is the largest excess of deaths over births ever registered except during the course of wars or epidemics.

This rapid fall in the French natality figures is particularly disturbing when the increased number of births, 225,000 in 1934, is noted in Germany.

BERLIN

(From Our Regular Correspondent)

Aug. 26, 1935.

Gastro-Intestinal Disease and Infant Mortality

According to Professor Rott in the federal bureau of health, the deaths in Prussia (1926-1932) from diseases of the gastro-intestinal tract in children under 1 year of age were as shown in table 1.

Examination of the table reveals that the males show a higher mortality than the females. In both sexes, however, the mortality from diseases of the gastro-intestinal tract is steadily

TABLE 1.—*Deaths from Diseases of Intestinal Tract*

	Males		Females	
Year	No. of Deaths	Per Thousand Living Births	No. of Deaths	Per Thousand Living Births
1926	6,326	16.3	4,613	12.6
1927	5,015	13.6	3,548	10.3
1928	4,963	13.3	3,580	10.2
1929	5,766	15.9	4,117	12.1
1930	4,118	11.6	2,891	8.6
1931	3,418	10.4	2,376	7.7
1932	3,067	9.9	2,299	7.9

regressing, a movement that began about 1905. The downward trend was interrupted during the excessively hot years 1911, 1914, 1917, 1921, 1923 and 1929. Whereas in 1905 about 550 children for each 10,000 living births were carried off by gastro-intestinal diseases, in recent years the number has been brought under 90 per 10,000 living births. In the mortality from gastro-intestinal diseases the well known summer peak has disappeared in various parts of Germany. Today one infant for

TABLE 2.—*Progressive Reduction in Mortality*

Year	Relative Mortality in Males	Relative Mortality in Females
1903	100	100
1913	82.6%	79.7%
1918	40.3%	37.3%
1925	35.6%	31.8%
1930	23.6%	20.1%
1932	20.1%	18.3%

each 100 living births dies from a gastro-intestinal disease. If one places the mortality from gastro-intestinal diseases for the year 1903 (from which dates the beginning of consistent welfare aid for infants) at 100, table 2 shows the progress that has been made since that year.

Similar results are shown if the deaths from other nursling's disorders, such as eczema, furunculosis, inflammations of the cellular tissues, Barlow's disease, scurvy, rickets, anemias,

TABLE 3.—*Reduction in Mortality from Other Nursling's Disorders, Such as Eczema and Furunculosis*

Year	Relative Mortality in Males	Relative Mortality in Females
1903	100	100
1913	59.6%	59.7%
1918	58.9%	56.8%
1925	35.1%	33.7%
1930	20.9%	19.8%
1931	19.6%	18.1%

diseases of the ear, inflammations of the umbilicus, and, finally, infantile convulsions, are combined and the mortality for 1903 is, as before, placed at 100.

The slide in the downward movement occurred between 1903 and 1913. In this group of diseases also the mortality is today less than one fifth of that recorded for 1903. If the same comparison is applied to the general infant mortality, one gets figures shown in table 4.

Table 4 reveals that the reduction in the general infant mortality is far below that recorded in table 2 for the mortality from gastro-intestinal diseases and in table 3 for eczema, furunculosis, scurvy, rickets, ear disorders, anemias and the like. The general infant mortality today is about two fifths of the mortality for 1903, in spite of the 80 per cent reduction in mortality recorded for the two groups of diseases considered in tables 2 and 3. It is evident, therefore, that the mortality of the first year of life is no longer dominated by the mortality

TABLE 4.—*Reduction in the General Infant Mortality Since 1903*

Year	Relative Mortality in Males	Relative Mortality in Females	Relative Mortality, Males and Females
1903	100	100	100
1913	77.7%	76.6%	77.3%
1918	78.2%	76.9%	77.6%
1925	54.7%	52.4%	53.7%
1930	44.7%	42.0%	43.5%
1932	41.5%	40.3%	41.0%

from diseases of the digestive tract but rather by the mortality from other diseases (constitutional weakness, influenzal disorders and the like), which were formerly pushed into the background, as it were, by the excessive mortality resulting from diseases of the gastro-intestinal tract.

Almost half of the deaths of infants are due today to constitutional weakness or lack of vitality, a seventh to influenzal disorders, including pneumonia, and about one fourth to diseases of the digestive tract and to other nursling's disorders such as eczema, furunculosis, scurvy and rickets. The deaths from diseases of the digestive tract now constitute only one ninth of the infant mortality; in 1903 they amounted to one fourth. The situation, as compared with the first two decades of this century, has changed so that, in the nutritional problems of the infant, morbidity plays a more important part than mortality. In general, the combating of infant mortality, with the increasing elimination of the diseases controlled by environment, is shifting more and more in the direction of hereditary biology and constitutional history.

ITALY

(From Our Regular Correspondent)

Aug. 31, 1935.

The Crusade Against Tuberculosis

At a meeting of the National Federation for the Combating of Tuberculosis, Greppi spoke on purpura tuberculosa and generalized tuberculosis with episodes of purpura and with vascular signs of hemorrhagic diathesis. In benign purpura with a tuberculous substratum, clinical observations have shown the benefits derivable from splenectomy, as in the field of hemorrhagic syndromes, with a deficiency of blood platelets.

Zurria pointed out that osteo-articular tuberculosis is not following the descending curve that has characterized the pulmonary types for years. In view of the frequent coexistence of visceral lesions in patients with osteo-articular tuberculosis, especially in children, he emphasized the need of sanatoriums for the treatment of osteo-articular tuberculosis.

Fichera described the results of phrenic exeresis. The immediate results of this method have aroused enthusiasm, some authors believing that it may replace pneumothorax in the treatment of pulmonary tuberculosis. According to the author, phrenicectomy has a more limited value than was at first supposed. While it is an adjunct of collapse therapy, it does not have a marked curative action. There is rarely a permanent cure. Often the good effects are of short duration. The cavities at the base of the lung are the lesions that derive the greatest benefit. The operation is not exempt from damage and complications.

Giuffrida spoke on the importance of the problem as to when pneumothorax should be interrupted. In exudative types, the treatment should not be extended over a long period. In the mixed types, and in the productive types, which heal by way of fibrosis, and in the types in which recurrences are frequent, it is necessary to continue the treatment longer.

Gualdi spoke on the spontaneous healing of early cavities and advanced three different explanations.

Randone made a contribution on the dissociation of the Koch bacillus, presenting and describing a strain of acid-resistant and alcohol-resistant bacillus that he isolated in 1930 from the sputum of a tuberculous patient. The strain had as characteristics a yellowish pigmentation and a creamy consistency, which are characters of stability. The speaker thinks that it was a variety of Koch bacillus that possessed the combined characters of the variants S and Ch.

Zito, in studying patients with pulmonary tuberculosis during the application of collapse therapy, discovered that the uvula undergoes deviations from its median position. In hypotensive pneumothorax the uvula is turned toward the side of the pneumothorax, whereas the contrary is true if the pneumothorax is hypertensive. In bilateral pneumothorax the deviation is toward the side on which the lung is less expanded.

League of Mental Hygiene

The League of Hygiene and Mental Prophylaxis held its session in Bari. Professor D'Antona discussed the nature of psychiatric aid in the region of Apulia and Lucania. For about three million people there is a psychiatric hospital and an institute for mental defectives. A new hospital is about to be opened. Professor D'Antona proposed that neuropsychiatric dispensaries be established in all the principal centers; that a census be made of the mentally abnormal children in the elementary schools and in the prisons for minors, and that in the higher courses of instruction and in the schools for nurses a part of the instruction be reserved for neuropsychiatric aid, in order to train a suitable personnel for welfare aid work.

Protection for Mother and Child

During 1934 the Opera nazionale per la protezione della maternità e infanzia supplied aid, through admission to various institutions, to 1,096,567 expectant and nursing mothers and children. In addition, 73,161 unmarried pregnant women and mothers, and abandoned and delinquent children, have received aid of a moral character, in observation centers and institutes for reeducation. The legal recognition of natural children has been effected and illegitimate unions have been legalized. The distribution of 8,654 marriage and birth premiums has been made, while 17,910 mothers have been given special premiums for giving children proper hygienic care. During the year 8,535 institutes needed for the carrying on of the work have been created, including obstetric and pediatric consultation centers, maternal refectories and milk stations.

Hospital Exhibits

In connection with the International Congress of Hospitals, an exposition of Italian hospitals and an exhibit of hospital equipment were organized. The army medical corps contributed a display of plaster casts and documents from some of its newer hospitals. Likewise, an exhibit was furnished by the institute of social insurance, to which are entrusted the functioning of compulsory insurance against tuberculosis and the construction and management of sanatoriums. Special exhibits were organized by the hospitals of Milan, Rome, Leghorn and Brescia. The Brescia Hospital is one of the largest and most modern hospital buildings in Italy, with a total of 1,450 beds. From a central octagonal court radiate eight separate buildings. In this hospital there is a distinct separation between the movements of persons on the ground floor and the transportation

V 1
193

of equipment and materials, which is effected through two distinct corridors on the floor below, the aseptic service (drugs, food supplies and linen) being confined to one corridor, and the septic service (truck loads, garments of patients, sweepings and refuse) to the other corridor. The services are organized in such an effective manner that in less than five minutes food from the kitchen or drugs from the pharmacy can be carried to any department. The practicable construction of the hospital is reflected also in the cost of erection, which does not exceed 14,000 lire ($1,120) per sick-bed, which may be regarded as a record in economy.

VIENNA

(From Our Regular Correspondent)

Sept. 8, 1935.

Infant Mortality in Austria

A recently published report of the Austrian public health service reveals the beneficial effects on infant mortality resulting from the systematic aid given to infants and mothers. After the close of the World War, similar observations were reported from all countries affected; first an increase and later a rapid decline in the birth rate. In the republic of Austria 137,372 living births were recorded in 1920. The next year showed a 4 per cent increase, and the following year a 7 per cent increase; but then a distinct decline set in, which in twelve years amounted to more than 40 per cent (a drop from 150,800 in 1922 to 90,924 in 1934). In Austria no attempts on the part of the government were made to raise the birth rate by the granting of financial rewards. Instead, the decline of the population was combated by endeavoring to reduce the infant morbidity and mortality. This was accomplished by appointment of an "Executiv-Comité der Säuglings- und Kleinkinder-Fürsorge," and the aid of the ministry for social administration and of the local health bureaus. The 104 consultation centers for mothers were further developed and new centers were added, so that now there are 492 such centers. In addition, seventy-eight supplementary centers were established in rural districts; also thirteen consultation centers for pregnant women. A special scientific committee, with which the leading pediatricians, the heads of the local health boards, and the officials of the ministry and of the municipal bureaus cooperate, has worked out a system according to which, in the centers, 515 physicians and 530 trained nurses give professional advice to the mothers of infants up to 1 year of age, all without charge. About 100,000 children were supervised last year, more than the total number of births for the year. The results are satisfactory. Whereas in 1920 the infant mortality was 157 per thousand living births, the mortality rate has declined every year except one (1928)—more rapidly, in fact, than the birth rate. The infant mortality rate was 117 per thousand living births for 1925, 106 for 1930 and 91 for 1934, which is a reduction of 45 per cent. The absolute number of deaths among children under 1 year shows a corresponding decrease: 1920, 22,762 deaths; 1925, 15,895; 1930, 11,665; 1934, 8,821. It must not be forgotten, however, that the number of births has declined by 40 per cent. Nevertheless a comparison of the deaths in 1920 (22,762) with the deaths in 1934 (8,821) brings out the fact that the deaths of children under 1 year of age have declined by 63 per cent. Expenditures in the amount of 773,000 Austrian shillings (about $150,000) were borne by the ministry of health, and the next few years will doubtless bring still higher expenditures, because further development of the centers in the rural districts, and more particularly in the mountain regions, is an urgent need. The cities, such as Vienna, are adequately provided for. A model institution, which has been studied by the governments of many different countries, is the Reichsanstalt für Mutter- und Säuglingsfürsorge; another excellent institution is the Central-Kinderheim der Gemeinde Wien.

Rôle of the Stomach in Hematopoiesis in Anemic Persons

Some time ago, Professor Bence of Budapest, as a guest of the Society of Internal Medicine, delivered a lecture in Vienna on the rôle of the stomach in hematopoiesis, of which the following is a digest: By the single injection of large doses of active liver extract (20 cc.) a remission of several months is regularly effected. This is a sure test of the potency of a liver extract. Bence removed the stomach of hogs and after a few months tested their livers as to the antianemic potency, which was found to be lost. In the gastrectomized animals there developed, from five to six months after the operation, a microcytic anemia, such as is occasionally observed also in man following gastrectomy. From nine to twelve months after removal of the stomach, the experimental animals developed a hypochromic blood picture, with reduced diameter of the erythrocytes (3.8 microns). Two animals that were not killed to determine the antianemic potency of their livers, as were the others, survived the operation by seventeen and twenty-one months, respectively. Both these animals presented, during the last months of their existence, a transformation of their microcytic, hypochromic blood picture into a macrocytic anemia with increased color index and diameter of the erythrocytes up to 8.8 microns; at the same time there was a reduction in the leukocyte count and the thrombocytes amounting to from 40 to 50 per cent, together with increase of the bilirubin in the blood serum. At necropsy the spleen and liver were found to be of normal size, and no hemosiderosis, in contrast with the observations on pernicious anemia in man. In all long bones there were found large quantities of active red bone marrow, in which the formation not only of red but also of white blood corpuscles was increased to embryonic proportions. There were also a few megaloblasts. Bence believes that also in man pernicious anemia presents in the beginning stages a microcytic, hypochromic alteration of the blood picture, but it is not open to medical observation.

The liver of the gastrectomized animals (hogs) shows a progressive reduction of its copper content down to a few slight traces, while examination of commercial liver preparations discloses that their potency increases in direct proportion to their copper content. In human blood the normal copper level is 0.94 mg. per hundred cubic centimeters. During pregnancy it may be increased to 1.94 mg., probably because considerable quantities of copper must be directed to the embryonic liver. In pernicious anemia one observes also an increase of the copper level up to 1.42 mg.; also secondary anemia shows such a behavior. On the other hand, in syphilitic anemia and anemia associated with carcinoma, which show no increase in blood formation, low values ranging around 0.5 to 0.7 mg. per hundred cubic centimeters are found. Professor Bence holds, therefore, to the conception that to the stomach may be assigned a dominant qualitative and to copper metabolism more of a quantitative rôle in hematopoiesis.

The Vienna Emergency Relief Society

The Wiener freiwillige Rettungsgesellschaft, which may be solicited in the event of any accident on the street or in the homes, has rendered aid in 15,000 accidents. There were 26,685 patients involved, who were given aid without consideration as to social station, nationality or religious affiliation, all without charge. The recently published report announces an increase in the number of suicides: 339 men, 282 women, two children under 14 years of age. In addition there were 680 men and 872 women who failed in their attempt. Most of the suicides used illuminating gas; next came poisoning, then hanging, then firearms. The most suicides occurred in April, the next largest number in March, and the fewest in September. In factories and machine shops, September is the most dangerous month for accidents, July coming second. The highest figure for accidents

in general was reached in 1934 in July (2,675 accidents in Vienna); next came September with 2,531 accidents, while the fewest occurred in January (1,181). Another task of the Rettungsgesellschaft is to transport to a hospital or to the police station intoxicated persons found injured on the street. In this section wine is the most common alcoholic beverage. August appears to be the most dangerous month for the wine drinkers (seventy-four cases), while Christmas celebrations make December a close second (sixty-three cases). The number of accidents among men is nearly twice as great as among women; likewise in street accidents the proportion remains about the same (630 men, 390 women). Eighty-seven men and seventy women had to be brought to the psychiatric clinic. Of the victims of automobile accidents 1,233 were men and 402 were women (3:1); in railway accidents forty-six men and five women were involved; in street railway accidents, 234 men, 134 women and 22 children. Of the 531 bicyclists suffering accidents 348 were men, 136 women and 47 children (under 14 years).

Professor Dr. Anton Eiselsberg

Prof. Anton von Eiselsberg, Austria's most eminent surgeon, has celebrated his seventy-fifth birthday and is still in full possession of his mental and physical vigor. When in 1884 he took his doctor's degree in Vienna he had pursued his medical studies in many of the leading universities of Europe. He was Billroth's favorite pupil and became his assistant in 1887. Two years later he became privatdozent, and at the age of 33 he was called to Utrecht and then to Königsberg. In 1901 he accepted a similar position in Vienna, where he did pioneer work for thirty years as physician, instructor, investigator and surgeon. His researches on erysipelas, sepsis, anthrax and tetanus were milestones in the history of surgery. Surgery of the thyroid and of the parathyroids owes its first development to Eiselsberg. He devoted himself particularly to the problem of cancer, and he transplanted the first sarcoma to the rat. His surgical interventions on the cranium made his name known in all countries. At his clinic, of which the emergency station is an important part, the cardiac suture and blood transfusion were perfected in their technic. The railway emergency service owes its existence chiefly to him. He has been an earnest opponent of the abuse of alcoholic beverages and against the antivivisectionists. Eiselsberg founded in Vienna what is virtually a "school" of surgery. His pupils may be found in many of the surgical clinics and hospitals of central Europe. He is doctor honoris causa of many universities; he is the possessor of the Lister gold medal (a high distinction in England) and has been the recipient of countless honors and has held innumerable positions of honor. Evidence of his modesty and retiring disposition may be derived from the fact that he refused to accept the holding of any ceremonies in honor of his seventy-fifth birthday and spent the day in quiet. But all his many admirers express the ardent wish: *ad multos annos!*

Increase in Physicians in Vienna

The municipal bureau of health, which exercises supervision over the medical personnel of Vienna, reports that the number of physicians is still on the increase. At the end of 1930 there were 4,651 physicians in Vienna, 475 of whom were women. At the end of 1934 there were 4,732 physicians, 500 of whom were women. The dentists show a similar increase, there having been in 1930 1,726 physician-dentists (zahnärzte) and "dentists" (zahntechniker) combined, while in 1934 the number had increased to 1,823. There is thus one physician to every 380 inhabitants, and one physician-dentist or "dentist" to every thousand inhabitants. It should be noted, however, that of the 4,732 registered physicians about 900 are hospital physicians who have no private practice and who, after completion of their hospital service, will likely settle in the provinces, outside of Vienna.

Marriages

HARRIS HILLMAN PALMER, Orangeburg, N. Y., to Miss Jessie Speirs Travis of Monsey in Spring Valley, June 29.

CLARENCE HOGUE INGRAM JR., Pittsburgh, to Miss Mary Katherine Evans of New Rochelle, N. Y., July 10.

JAMES REX SHOLL, St. Petersburg, Fla., to Mrs. Betty Belcher of Charleston, W. Va., in Chicago, June 2.

HENRY HARRIS DREWRY to Dr. Virginia MacDonald Moore, both of New York, in Elizabeth, N. J., September 4.

WALLACE TREZER SMITH, East Rockaway, N. Y., to Miss Marian M. Walbancke of Richmond Hill, July 21.

WILLIAM FREEMAN to Miss Gertrude Leah Le Clair, both of Worcester, Mass., in New York, October 11.

JOHN WALTER HOUK, Akron, Ohio, to Miss Mary Hammond O'Brien of New Haven, Conn., July 27.

WILLIAM G. HAMM, Atlanta, Ga., to Mrs. Katharine Cathcart Moore of Charleston, S. C., August 28.

WILLIAM O. WUESTER JR., New York, to Miss Janet Evelyn Hampsh in Pompton Lakes, N. J., July 20.

SHERMER HAINES STRADLEY to Miss Margaret Elizabeth Spencer, both of Wilmington, Del., July 1.

WILLIAM M. NETHERY, Lovelock, Nev., to Miss Jessie Mae Elmore of Shreveport, La., September 22.

KENNETH G. KOHLSTAEDT, Indianapolis, to Miss La Verne Freeman of Bloomington, Ind., July 14.

OTIS GARDNER KING, Bluefield, W. Va., to Miss Mayble Isobel Lawrence of Ashland, October 8.

JAMES EDWIN THOMPSON to Miss Ethel Bartlett, both of New York, in Litchfield, Conn., July 6.

EDWIN KENNEDY PROVOST, Nashville, Tenn., to Miss Edith Morgan Cassidy of Cincinnati in June.

PHILIP B. GREENE, Spokane, Wash., to Miss Marjorie Wilcoxson in Springfield, Ill., August 17.

RAY L. RHYMES JR. to Miss Bessie Budhill, both of Houston, Texas, in Shreveport, La., July 1.

WADE BISHOP ELLIS, Buffalo, to Miss Catherine Mowat of Long Island City, N. Y., October 10.

HORACE H. HOLT, Nashville, Tenn., to Miss Elizabeth Abbie Seale of Greenshaw, Miss., July 18.

ALVA A. JACKSON, Florence, Ala., to Mrs. Marguerite Smith in Nashville, Tenn., July 25.

MICHAEL WILLIAM HOLEHAN to Miss Elizabeth Weathersby, both of Memphis, Tenn., July 20.

WILLIAM T. SALTER, Boston, to Miss Eleanor Vallandigham of Chestnut Hill, Mass., June 27.

FRANCIS SAMUEL DIXON to Miss Virginia Waldo Butler, both of Natchez, Miss., September 14.

JAMES WYATTE TARRANT JR., Philadelphia, to Miss Marguerite Sinquefield, October 15.

JOHN YOUNG O'DANIEL, Erwin, Tenn., to Miss Betty Matthews of Dayton, October 12.

SHELDON C. BAJEMA, Wallace, Idaho, to Miss Lois Horton of Bonners Ferry, August 21.

PETER E. SABATELLE to Miss Vivian Cowart, both of Brooklyn, in Atlanta, Ga., June 18.

WILLIAM B. SWIGERT, Denver, to Miss Ruth E. Anderson of Ogallala, Neb., July 12.

CLIFFORD A. LUTGEN, Auburn, Neb., to Miss Edna Hanke of Nebraska City, July 10.

REUBEN A. MACBRAYER to Miss Myrtle Florence Fox, both of Brooklyn, October 5.

LORENZ TEER, Delhi, La., to Miss Madeline Haughton in Haynesville, June 16.

JOHN C. RIGGINS, Tucson, Ariz., to Miss Rachel Thompson in Bisbee, June 28.

ALLYN KING FOSTER JR., Brooklyn, to Miss Elsa Margareta Nilsson, October 4.

JOHN A. RIEBEL II to Miss Gayle Stevens, both of Hamilton, Ohio, June 30.

KARL M. BECK to Miss Fannie Manley, both of Waukegan, Ill., September 20.

GILBERT E. SCHOENFIELD to Miss Fern Niman, both of Detroit, June 2.

BARRETT L. TAUSSIG, St. Louis, to Miss Margaret Humphreys in June.

V 1
193

Deaths

Joseph Colt Bloodgood ✠ adjunct professor of surgery, Johns Hopkins University School of Medicine, Baltimore, and head of the laboratory of surgical pathology, died suddenly, October 22, in Baltimore, of coronary thrombosis. Dr. Bloodgood was born in Milwaukee, Nov. 1, 1867. He received the degree of bachelor of science from the University of Wisconsin in 1888, and that of doctor of medicine from the University of Pennsylvania Department of Medicine, Philadelphia, 1891. The following year he served as assistant resident surgeon to the Johns Hopkins Hospital and then went abroad to study. On returning from Europe in 1893 he became resident surgeon at the Johns Hopkins Hospital. At various times he was assistant instructor, associate in surgery and associate professor of clinical surgery and clinical professor of surgery at Johns Hopkins University School of Medicine. He was one of the founders and a member of the board of directors of the American Society for the Control of Cancer, a member of the American Surgical Association, the Southern Surgical Association, the Society of Clinical Surgery, the American Association for Cancer Research, the American Public Health Association and the Deutsche Gesellschaft für Chirurgie, and a fellow of the American College of Surgeons. He was a member of the Radiological Society of North America, which in 1929 awarded him a gold medal for his study of malignant conditions of bone and their diagnosis and treatment by means of x-rays and radium. When the United States entered the World War in 1917 he was commissioned a major in the medical reserve corps of the U. S. Army; he was made a member of the medical section of the National Council of Defense and also of the national medical commission of the American Red Cross. Dr. Bloodgood was assistant visiting surgeon to the medical staff of the Johns Hopkins Hospital and Dispensary and chief surgeon to St. Agnes' Hospital, and was on the editorial board of the *American Journal of Cancer*. He contributed to the periodical medical literature and traveled widely to address public and professional audiences, chiefly on the subject of the early diagnosis and the prevention of cancer.

Acme

JOSEPH COLT BLOODGOOD, M.D.
1867-1935

Mortimer Williams Raynor ✠ White Plains, N. Y.; Syracuse University College of Medicine, 1904; professor of clinical psychiatry, Cornell University Medical College, New York; formerly assistant professor of psychiatry and clinical professor of psychiatry, Columbia University College of Physicians and Surgeons; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; past president of the Medical Society of the County of Westchester, the New York Psychiatric Society and the New York Society of Clinical Psychiatry; served during the World War; at one time psychiatrist of the Department of Correction, stationed at Welfare Island; chairman of the executive committee of the Mental Hygiene Committee of the State Charities Aid Association; assistant physician to the Hudson River State Hospital, Poughkeepsie, 1907-1917, director of clinical psychiatry, Manhattan State Hospital, New York, 1917-1923, and assistant physician, 1923-1924; consultant, psychiatrist and neurologist, St. Francis Hospital, Poughkeepsie, 1915-1917; adjunct associate consultant to the Children's Hospital, New York, 1920-1924; visiting neurologist to the Letchworth Village, Thiells, N. Y., 1923-1924; medical superintendent of the Kings Park (N. Y.) State Hospital, 1924-1926; member of the board of visitors of the New York State Reformatory for Women, Bedford, 1929-1930; on the staffs of the Grasslands Hospital, Valhalla, N. Y., and the New York Hospital; medical director of the Bloomingdale Hospital; aged 56; died, October 5.

Frederick Petheram Wilbur ✠ Franklin, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1906; executive secretary of the Sussex County Medical Society; formerly member of the board of education and president of the board of health of Franklin; a member of the medical staff of the Alexander Linn Hospital, Sussex, the Newton (N. J.) Hospital and the Franklin Hospital; aged 55; died suddenly, September 8, of angina pectoris.

William W. Jackson, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1896; member of the Arkansas Medical Society; past president of the Craighead-Poinsett Counties Medical Society; formerly president of the city board of health and member of the state board of health; on the staff of St. Bernard's Hospital; aged 72; died, September 7, of nephritis and myocarditis.

William D. Porter ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1887; professor emeritus of clinical obstetrics, University of Cincinnati College of Medicine; past president of the Cincinnati Academy of Medicine; at various times on the staffs of the Bethesda Hospital, Cincinnati General Hospital and the Jewish Hospital; aged 74; died, September 27, of heart disease.

John Bryant ✠ Brookline, Mass.; Harvard University Medical School, Boston, 1907; member of the New England Pediatric Society; member and past president and secretary of the American Gastro-Enterological Association; served during the World War; aged 54; died, September 19, of cerebral hemorrhage.

Will Lyman Griffin, Shelby, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1888; member of the Michigan State Medical Society; past president of the Oceana County Medical Society; on the staff of the Shelby Community Hospital; aged 76; died, September 5.

William Shelton Osborn, Osage, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; member of the Iowa State Medical Society; veteran of the Spanish-American War; aged 58; died, September 3, in a hospital at Rochester, Minn., of embolism.

Wilfred G. Riopelle ✠ Beaver Dam, Wis.; Marquette University School of Medicine, Milwaukee, 1915; past president of the Dodge County Medical Society; aged 46; died, September 9, in St. Joseph's Hospital, Milwaukee, of heart disease.

Theodore Elmer Jeffery, St. Augustine, Fla.; Arkansas Industrial University Medical Department, Little Rock, 1898; member of the Arkansas Medical Society; served during the World War; aged 62; died, September 5, of cerebral hemorrhage.

Thomas William Wilson, New Harmony, Ind.; Miami Medical College, Cincinnati, 1887; member of the Indiana State Medical Association; health officer of New Harmony; aged 74; died, September 1, of coronary sclerosis and angina pectoris.

Van Buren Dudley Viets, Youngstown, Ohio; Eclectic Medical Institute, Cincinnati, 1895; member of the Ohio State Medical Association; aged 64; died, August 22, in the North Side Unit of the Youngstown Hospital, of cerebral hemorrhage.

Van Noyes Verplanck, New York; Johns Hopkins University School of Medicine, Baltimore, 1918; member of the Medical Society of the State of New York; aged 44; died, September 11, of gastritis due to cyanide poisoning.

John Morgan Hackley, Miami, Fla.; University of Louisville (Ky.) Medical Department, 1891; served during the World War; aged 69; died, September 2, in the Veterans Administration Facility, Augusta, Ga., of bronchopneumonia.

James Vincent Nigrelli, Wakefield, R. I.; Tufts College Medical School, Boston, 1932; served during the World War; aged 36; on the staff of the South County Hospital, where he died, August 10, of an infection of the throat.

Isidor Topkins, Califon, N. J.; Long Island College Hospital, Brooklyn, 1899; past president of the Hunterdon County Medical Society; aged 64; died, September 2, at Newark, of coronary sclerosis and pulmonary infarction.

Albert Pfeiffer ✠ Albany, N. Y.; L.R.C.P., London, and M.R.C.S., England, 1911; served during the World War; director of social hygiene, New York State Department of Health; aged 53; died, September 24.

John C. White, Atlanta, Ga.; Southern Medical College, Atlanta, 1889; member of the Medical Association of Georgia; formerly member of the state legislature; aged 76; died, September 7, of heart disease.

John H. Daugherty, Glendale, Calif.; Central College of Physicians and Surgeons, Indianapolis, 1881; aged 76; died, July 12, in the Glendale Sanitarium, of acute suppurative appendicitis and peritonitis.

John Arthur True ✠ Spokane, Wash.; University of Michigan Homeopathic Medical School, Ann Arbor, 1912; served during the World War; aged 47; died, July 26, in the Deaconess Hospital, of brain tumor.

Frank Stage Rarey, Columbus, Ohio; Starling Medical College, Columbus, 1892; member of the Ohio State Medical Association; aged 80; died, September 7, in the Mount Carmel Hospital, of uremia.

Thomas Allen Lamb, Alexandria, Va.; College of Physicians and Surgeons, Baltimore, 1915; member of the West Virginia State Medical Association; aged 47; died, August 30, in Port Republic.

Louis Douglas Stoner, Sophia, W. Va.; University and Bellevue Hospital Medical College, 1927; member of the West Virginia State Medical Association; aged 33; died, August 14, of pneumonia.

Eugene P. Nolan, Chicago; Bennett Medical College, Chicago, 1915; on the staff of St. Mary of Nazareth Hospital; aged 54; died, August 16, of arteriosclerosis and coronary thrombosis.

Richard Alonzo Napier, Union City, Tenn.; University of Nashville Medical Department, 1900; aged 62; died, September 7, in St. Thomas Hospital, Nashville, of cardiorenal disease.

Lewis Henry Campbell, Bradford, Ont., Canada; M.B., University of Toronto Faculty of Medicine, 1892; Victoria University Medical Department, Coburg, 1892; died, August 19.

Clifford Sutherland Losey, Long Beach, Calif.; Rush Medical College, Chicago, 1897; aged 60; died, August 11, in the Seaside Hospital, of cerebral thrombosis and arteriosclerosis.

Josiah Peet Bixby, Woburn, Mass.; Medical School of Maine, Portland, 1876; member of the Massachusetts Medical Society; aged 80; died, September 1, of cerebral hemorrhage.

Bernard Berens, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1880; aged 77; died, September 12, of thrombosis of veins of the leg.

Robert Thomas Saville, Mineville, N. Y.; University of the City of New York Medical Department, 1881; aged 85; died, August 4, of carcinoma of the prostate.

Philip August Bill ✠ San Francisco; University of California Medical Department, 1902; aged 54; died, August 27, of coronary thrombosis and angina pectoris.

Joseph Stephen Thorne, North Evans, N. Y.; University of Toronto Faculty of Medicine, Toronto, Ont., Canada, 1896; died, August 11, of pulmonary tuberculosis.

Basile Ivanovich Studensky ✠ New York; State University of Kazan Faculty of Medicine, Russia, 1911; aged 49; died, September 8, of coronary thrombosis.

Mary K. Baker, New York; University of Minnesota College of Medicine and Surgery, Minneapolis, 1900; aged 68; died, September 15, of multiple sclerosis.

Charles Angelo Briggs, Pasadena, Calif.; Long Island College Hospital, Brooklyn, 1876; aged 84; died, August 25, of chronic myocarditis, following influenza.

Charles Otmer Staats, Spencer, W. Va.; University of Louisville (Ky.) Medical Department, 1893; served during the World War; aged 68; died, August 25.

LaFayette McClontock Hunter, Little Rock, Ark.; Eclectic Medical University, Kansas City, Mo., 1913; aged 47; died, September 3, of angina pectoris.

Theodore Tsangaris, Tarpon Springs, Fla.; National University of Athens School of Medicine, Greece, 1913; aged 44; died, September 1, of carcinoma.

Lucy C. Harrison Atherton, Grand Rapids, Mich.; Woman's Medical College, Chicago, 1890; aged 79; died, July 16, of pulmonary tuberculosis.

James B. McEnaney, Larchwood, Iowa; College of Physicians and Surgeons, Keokuk, 1878; aged 80; died, July 4, of myocarditis and nephritis.

Russell C. Harris, Bethpage, Tenn.; University of Louisville (Ky.) Medical Department, 1876; formerly county judge; aged 82; died, August 27.

Charles Irwin Taylor, Detroit; Detroit College of Medicine, 1896; aged 71; died, August 10, of uremia and hypertrophy of the prostate.

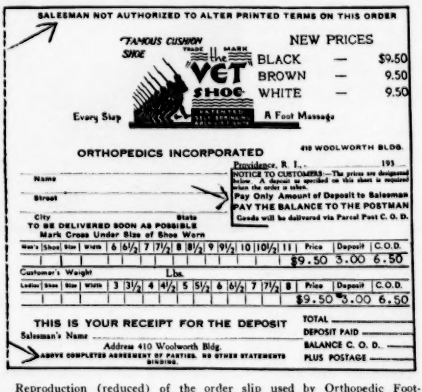
Bureau of Investigation

ORTHOPEDIC FOOTWEAR, INC.

A Warning to Physicians

A physician in Mississippi was called on July 30 by one Wilbert Briggs, who showed credentials to the effect that he represented "Orthopedic Footwear, Inc.," 410 Woolworth Building, Providence, R. I. The physician gave Briggs an order for a pair of shoes for his little girl and a so-called Cushion Arch Lift for his wife. The list price of the shoes was given as $9.50 and of the Arch Lift as $3.50, but Briggs stated that a special price was made to physicians of $6.50 and $2, respectively. Briggs was paid the full amount ($8.50) and gave a receipt for both the shoes and for the Arch Lift on a duplicate order-blank, on each of which was written "Paid in full." However, printed on the same receipt order-blank was the statement "Pay only amount of deposit to salesman. Pay the balance to the postman."

On August 9, ten days after the order was given, the physician wrote to Orthopedic Footwear, Inc., asking that the order given representative Briggs for a pair of black shoes be changed to white. Orthopedic Footwear, Inc., did not answer the letter until nearly two weeks later—August 22—at which time they


SALESMAN NOT AUTHORIZED TO ALTER PRINTED TERMS ON THIS ORDER

"FAMOUS CUSHION SHOE" — The YET SHOE — Every Step A Foot Message

NEW PRICES
BLACK — $9.50
BROWN — 9.50
WHITE — 9.50

ORTHOPEDICS INCORPORATED 410 WOOLWORTH BLDG.

Providence, R. I., 193

NOTICE TO CUSTOMERS—The prices are designated below. A deposit is specified on this sheet is required before the order is taken.
Pay Only Amount of Deposit to Salesman
PAY THE BALANCE TO THE POSTMAN
Goods will be delivered via Parcel Post C. O. D.

Name
Street
City State
TO BE DELIVERED SOON AS POSSIBLE
Mark Cross Under Size of Shoe Worn

Men's Shoe	Size	Width	6	6½	7	7½	8	8½	9	9½	10	10½	11	Price	Deposit	C.O.D.
														$9.50	3.00	6.50

Customer's Weight Lbs.

Ladies' Shoe	Size	Width	3	3½	4	4½	5	5½	6	6½	7	7½	8	Price	Deposit	C.O.D.
														$9.50	3.00	6.50

THIS IS YOUR RECEIPT FOR THE DEPOSIT
Salesman's Name
Address 410 Woolworth Bldg.
ABOVE COMPLETED AGREEMENT BY PARTIES. NO OTHER STATEMENTS BINDING.

TOTAL
DEPOSIT PAID
BALANCE C. O. D.
PLUS POSTAGE

Reproduction (reduced) of the order slip used by Orthopedic Footwear, Inc., earlier know as Orthopedics, Inc., and still earlier known as Orthopedic Shoe, Inc. The order slip reproduced is a specimen copy sent to the Bureau of Investigation by the company and has been marked by the company to call attention to the fact that the doctor who paid the agent the full price should not have done so. On the duplicate order slip that was left with the doctor, agent Wilbert Briggs had written "Paid in full."

stated that they had no record of having received the doctor's orders, and asked him to send them the receipts that he had received and at the same time let them know the exact amount of cash which he had paid to Briggs. The physician sent the receipts as requested and stated the amount that he had paid Briggs. In the same letter he mentioned the fact that several other citizens of his town had paid Briggs amounts varying from about $2 to $20 and none had either heard anything regarding their orders nor received any merchandise.

This letter accompanying the receipts was sent on August 26. After waiting another three weeks—until September 14—and getting no acknowledgment from Orthopedic Footwear, Inc., the physician again wrote them, reminding them that he had received no reply. He let them know, also, that he had had photostatic copies of the receipts made before he parted with them, and he stated, further, that unless some satisfactory adjustment was made, he would take the matter up with the American Medical Association, so that other members of the profession could be protected. This letter brought a fairly prompt reply from Orthopedic Footwear, Inc., returning the receipts and calling attention to the statement printed on the receipts

which read: "Salesman not authorized to alter printed terms on this order." They also called attention to the further statement at the bottom of the receipt reading: "Above completes agreement of parties. No other statements binding." Orthopedic Footwear, Inc., emphasized, what has already been mentioned, that the blanks specifically state that persons placing orders should pay only the amount of deposit to the salesman, the balance being paid the mailman. The company also stated that they had "written Mr. Briggs very strongly," but that they doubted if their letters would reach him, as they had not heard from him for some time and that, in fact, two of their letters had already been returned unclaimed!

The only adjustment that the concern offered read as follows:

> "Now covering the order for Arch Lifts for Mrs. ——, we are willing to mail the Arch Lifts to her C. O. D. balance of $1.50 plus postage. In the case of the little girl, we want to say that the price of the shoes is $9.50 plus postage; consequently, there is a balance due of $3.00 on same. We are willing to mail the pair of shoes C. O. D. $6.50 plus postage (we must receive *at least* $6.50 for each pair shoes mailed from here). The amount of $3.50 which you will have overpaid on this order will be refunded to you as soon as the order and money have been received from Mr. Briggs."

A letter was written by the Bureau of Investigation to Orthopedic Footwear, Inc., referring to the physician's experience and the concern was asked in effect what it intended doing. In reply the company disclaimed any moral responsibility and reiterated that the physician was in error in paying agent Briggs in full. The letter closed on this note:

> "We are trying in every way possible to straighten these matters out, and it is our intention to mail the goods to the people *as soon as we are paid for them by Mr. Briggs.*" [Italics ours.—ED.]

In other words, it seemed to be a case of "Heads I win, tails you lose."

Investigation indicates that "Orthopedic Footwear, Inc." is a Delaware corporation, incorporated Feb. 25, 1935. It is a later name for what was previously known as "Orthopedics, Inc.," another Delaware corporation incorporated in May 1928. This in turn, was a later name for what used to be called "Orthopedic Shoe, Inc." The president of the company seems to be one Arnold C. Messler, while the secretary-treasurer is his wife, M. C. Messler. It is reported that A. C. Messler had previously been in the jewelry business both in Pawtucket and in Providence, but that the concern went into involuntary bankruptcy. The present business is said to consist in retailing shoes through agents and on the mail-order plan from Room 410 in the Woolworth Building, Providence, R. I. The visible resources of Orthopedic Footwear, Inc., seem to be extremely limited.

It is of further interest in this connection to note that the Better Business Bureau of Providence, R. I., in its bulletin for May 1935 published an item reading as follows:

> "Orthopedics, Inc., Woolworth Bldg., Providence, a retailer of shoes selling direct to consumers through agents located in various parts of the country, has been the subject of numerous complaints from people who alleged that shoes for which deposits or full amounts had been paid were not forthcoming from the concern; and that in instances where shoes were delivered wrong sizes were received and returned and that no shoes of the proper size or a refund of money had been made. Complaints received against the firm have been referred to government authorities. Orthopedics, Inc., is recorded as operated by Arnold Messler, M. C. Messler and M. C. Littlefield."

The physician's experience with Orthopedic Footwear, Inc., again emphasizes the risk that is run in paying money to unknown agents of equally unknown concerns. It seems desirable to do business with concerns about which the physician knows nothing, the suggestion should be made that the money be placed in escrow with a local bank, on the understanding that it will be paid over to the mercantile concern when the doctor has had the opportunity of determining whether the merchandise ordered comes up to the claims made for it.

Correspondence

HYPERGLYCEMIA AND ARTERIOSCLEROSIS

To the Editor:—In a communication from Dr. Eli Moschcowitz with the title "Hyperglycemia" (THE JOURNAL, September 28, p. 1057) is a criticism of the general opinion that diabetes is a contributing factor in the causation of arteriosclerosis. Dr. Moschcowitz not only disagrees with that opinion but accuses many writers of confusing arteriosclerosis with "the lipoid imbibition of the aorta" found among other conditions in advanced diabetes and in experimental atherosclerosis in rabbits. In suggesting that the arterial lesions found in advanced diabetes are not arteriosclerotic, he attacks the bases on which our knowledge of arterial disease has been constructed and adopts a thesis which no observations published by him or others will adequately support. Moreover, he accuses me of calling this lesion "atherosclerosis" in quotes, as though I had coined a new name for a condition something other than arteriosclerosis. It is unnecessary perhaps to restate that the term atherosclerosis is Marchand's (*Verhandl. Kong. f. inn. Med.* Leipzig **21**:23, 1904), that it applies to the important form of arteriosclerosis and that its usage has been accepted universally, even by the opponents of the cholesterol theory of the causation of arteriosclerosis.

The positive evidence that disturbances of the cholesterol metabolism are the cause of atherosclerosis can be concisely stated as follows: Cholesterol would fulfil all requirements as the etiologic agent if it were a question of a bacterial disease. Its constant presence in the lesions of the disease, its isolation from these lesions, the reproduction of the lesions in rabbits fed the substance in purity, its constant presence in the lesions of the experimental disease and the failure to reproduce the lesions with any other agent would satisfy the demands for specificity. It has been claimed by critics that the rabbit is not a proper animal for atherosclerotic research, since it does not suffer from atherosclerosis naturally. This form of reasoning would exclude Banting's experiments on dogs, which gave us insulin, and invalidate most of the animal experimental work with reference to infectious processes. It is claimed that the experimental lesions in the rabbit do not always exactly correspond to human lesions. To stress the differences and ignore the similarities between the pathology of natural and experimental diseases would be to cast doubt on much of the experimental work on infectious diseases. Too meticulous requirements for identity of natural and experimental lesions would be difficult to satisfy in diphtheria, bacillary dysentery, cholera, meningococcic meningitis, typhoid and syphilis, for example, among others. There are some differences between the rabbit and human lesions of atherosclerosis. The rabbit differs from man anatomically, functionally and posturally. The differences in the lesions are for the most part marked by the excessive character of the experimental processes that are rapidly produced by excessive dosage of the substance. The closeness of the reproduction of the human lesions in general cannot be denied.

I have been able to show that the lesions of human aortic atherosclerosis owe their variety to the relative ability of the cells in these lesions to metabolize cholesterol. In youth the power to metabolize cholesterol within phagocytic cells is great and minimal permanent lesions result. In the middle period of life this metabolism is slowed and scarring results. In old age this metabolism ceases and so-called atheromatous "abscesses" are the standard lesion (Leary, Timothy: Atherosclerosis, the Important Form of Arteriosclerosis, a Metabolic Disease, THE JOURNAL, August 17, p. 475).

Finally, in no other condition has there been so widespread human experimentation in pathogenesis as was carried out in the feeding of high fat diabetic diets, rich in cholesterol, in the

decade 1920-1930. The results were just as definite as those obtained in the experimental rabbit. The relative dosage of cholesterol was smaller than the standard experimental dose in rabbits, and the results were more slowly produced. The human lesions, while not as spectacular as the more rapidly produced rabbit lesions, were spectacular enough, particularly in children. Moreover, the reverse procedure, i. e., the cutting down of the fats in the diet, including cholesterol, resulted in a return to the status quo ante experimentum—absence of xanthomas and of leg artery lesions demonstrable by roentgen examination in children, together with a return to the normal incidence of atherosclerosis.

Dr. Moschcowitz believes that stresses are the causes of arteriosclerosis. It is recognized that stresses are responsible for the selective localization and degree of the lesions. Other factors, including particularly aberrations in the function of the thyroid gland, play an important part, but basically atherosclerosis is dependent for its causation on disturbances in the cholesterol metabolism.

TIMOTHY LEARY, M.D., Boston.

To the Editor:—While a letter is too brief a vehicle for the discussion of so disputed a point as the etiology of arteriosclerosis, some statements in the communication of Dr. Eli Moschcowitz regarding diabetes and arteriosclerosis call for a reply. Few would subscribe to the belief that diabetes mellitus alone is a cause of arteriosclerosis, but the evidence is strong that the metabolic disturbances occurring in the course of diabetes are important factors in the development of arteriosclerosis of the atherosclerotic type.

With two statements particularly of Dr. Moschcowitz we take issue: 1. "To my mind all evidence seems to show that arteriosclerosis is the cause of diabetes rather than the reverse." 2. "When diabetes occurs in arteriosclerosis, the inference is that the capillaries of the islands of Langerhans are affected."

As regards this first point, at least 10 per cent of all cases of diabetes begin in the first two decades of life without any evidence of the existence of arteriosclerosis. Indeed, one third of all cases begin before the fortieth year. In our experience, diabetic children are not arteriosclerotic at the onset of their disease but may develop arteriosclerosis as the diabetes progresses. This development is minimized by adequate control of the diabetes by means of insulin and the avoidance of unbalanced diets high in fat. The peak of age incidence of diabetes antedates that of arteriosclerosis. The frequency of development of diabetes diminishes after the age of 55 years, although the frequency of arteriosclerosis in the community certainly increases after this age. Patients with diabetes of short duration have no more arteriosclerosis than nondiabetic persons of the same age at autopsy. But patients with diabetes of long duration show vastly more arteriosclerosis, especially in the hearts and legs, than nondiabetic persons. Many cases of diabetes at autopsy show little or no arteriosclerosis of pancreatic vessels, even though vascular damage elsewhere may be severe.

Dr. Moschcowitz's second statement is difficult to understand. Why depend on "inference" when direct observation has been made of thousands of islands of Langerhans and their capillaries? More than 20 per cent of diabetic pancreases show no significant pathologic changes (Warren, Shields: The Pathology of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1930). In many others no vascular changes are seen. Possibly hyalinization of the islands might be interpreted as a vascular lesion, but certainly not as arteriosclerosis.

If arteriosclerosis causes diabetes, why is it that after middle life, as the diabetes progresses in duration and the arteriosclerosis increases, the diabetes is so apt to become less severe?

SHIELDS WARREN, M.D.
HOWARD F. ROOT, M.D.
ELLIOTT P. JOSLIN, M.D.
Boston.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

FREQUENCY OF BOWEL ACTION IN INFANTS

To the Editor:—Of what sins of omission or commission am I guilty that so many of the babies that I deliver develop at about 1 week of age a very loose bowel? How am I to prevent it and what is a better treatment than protein milk? Please omit name.

M.D., Illinois.

ANSWER.—The writer of the question omits to state whether the babies he refers to are breast fed or artificially fed.

Newly born breast fed babies often have numerous and somewhat undigested stools, though they may gain in weight and show no constitutional effects. It has been suggested that this frequency of evacuations is due to an increased fermentation of food in the intestinal tract or to an irritation of the mucosa of the large bowel caused by the fermentation products, though as a general thing the increased evacuations have no particular significance. This group of infants, as a rule, require no medication, though if the condition persists unusually long or constitutional symptoms are present a 1 or 2 per cent solution of casein boiled in water will usually diminish the number and cause a firmer consistency of the stool.

A similar mild diarrhea may occur in artificially fed infants; if, however, they are restricted to a four hour feeding period and overfeeding is avoided and the food is properly prepared, with avoidance of an excess of sugar, the number of stools should promptly come to be of normal frequency and consistency. If the condition persists, a 2 per cent solution of powdered casein, boiled in water, may be added to the day's feeding.

URTICARIA FROM FURS

To the Editor:—A man, aged 28, has been having frequent attacks of urticaria for the last four months. He handles furs almost daily. The first attack occurred October 1, a few hours after a light evening meal consisting of cheese, pickles and beer, and was characterized by a generalized wheal formation covering the entire body. The wheals persisted, especially on the lower extremities, and were more marked at night. From October 1 to 9 the nocturnal outbreak of wheals was only slight, and partial relief was obtained by the use of epinephrine on four occasions and gynergen (ergotamine tartrate) for the remainder of the time. Urine examination and blood studies, including a Wassermann test, were negative. From October 9 to 14, urticarial attacks were quite severe. October 14 he went to Baltimore, where skin tests for sensitivity to furs, foods and pollens were found to be negative. He was started on nonspecific protein injections at that time; 10 cc. injections were given at four day intervals for six times, with no noticeable effect. November 1 he received whole blood injections, six 10 cc. injections being given at intervals of five days. This treatment yielded favorable results. A second series was started January 14, but the attacks again continued, mostly on the lower extremities, and on two occasions with severe swelling on one side of the head and face. He has been on an elimination diet for the past month, with no noticeable result. The patient is not of an extremely nervous temperament and he leads a rational, wholesome life. Can you suggest a possible etiology or any further treatment for these allergic attacks? Please omit name.

M.D., West Virginia.

ANSWER.—Urticaria is not a clinical entity. It may occur as a result of a large variety of sicknesses, such as hypersensitiveness (allergy), serum sickness and certain blood dyscrasias.

Urticaria due to allergy may follow the eating of certain foods that contain protein. Eggs, wheat, milk, fish, cheese, chocolate, pork, nuts and berries are the most common offenders; other foods may cause attacks of hives at times. In this particular case it might be wise to eliminate the foregoing foods for two or three weeks.

Drugs frequently bring on hives and angioneurotic edema, especially the latter. The most frequent causes are the coal-tar derivatives, especially amidopyrine, acetylsalicylic acid, acetanilid and acetphenetidin. Quinine is also an important drug in this connection; barbital preparations are likewise frequent offenders and certain other drugs may cause swellings. It is best to eliminate all drugs.

Urticaria may also come from contact with furs, silk, hairs, dyes and other chemicals and plants of various kinds. The history of such contact should be searched. In this case the fact that the patient works with furs would indicate a possible hypersensitivity either to a fur or to one of the dyes used in treating the furs. Paraphenylenediamine has been especially incriminated. Contact or patch tests should be done with suspected furs, dyes, chemicals and silks. For such tests the

material is moistened and placed against a normal area of skin and held in place by adhesive plaster for from twenty-four to seventy-two hours. Redness with vesiculation constitutes a positive test.

Avoidance of furs for two or three weeks may be advisable. If there is a hair mattress or a feather pillow, it is wise to avoid these for a time; some cases have been cleared up by this means. In all elimination trials (in order to avoid confusion) it is best to try one thing after another, not at the same time.

If no definite cause can be found for the hives, nonspecific treatment should be tried; autohemotherapy may be given again; peptone and vaccines sometimes relieve. Some cases seem to be due to physical allergy (heat, cold, pressure); Duke has written extensively on this subject.

SWIMMING AS A HAZARD TO PERFORATED EAR DRUM

To the Editor:—At some period during early childhood following scarlet fever I had an ear complication. Through misunderstanding the condition received no attention until after the drum had spontaneously ruptured. It was then treated vigorously for a long time, with no effect so far as the discharge was concerned. Very gradually growing less, the discharge finally stopped when I was about 17. Since that time the discharge has occurred intermittently following a coryza. The rupture in the drum is permanent. In 1923 following a swim (I had never been advised not to swim) I began to get very dizzy. The dizziness became so pronounced that confinement in bed for a week was necessary in a hospital. It was then discovered that some form of cellular detritus was forming in the attic of the middle ear. This dropped down, packed around the oval window, and also caused an engorgement of the blood vessels through mechanical pressure. Roentgen examination showed the mastoid to be hard and sclerotic. Search for cholesterin crystals, polypi or granulations was negative. Bacterial cultures were negative. Diagnosis was made of a perilabyrinthitis. Syringing was done and the detritus removed, which resembled pieces of very thin cartilage. The exact nature was never worked out. From this time on there was no trouble until 1927, when there was a recurrence. Since that time I have had trouble several times a year, especially this year, during which I have had only short periods of comfort since February. My general health is excellent. There are no familial diseases and very few colds. I do a good deal of strenuous athletics. The treatment has not varied since. I am under constant observation and the middle ear cavity is swabbed out occasionally with 1 per cent yellow mercuric oxide. Recently the Elliot heat treatment has been tried within the nose experimentally. The percentage of hearing in the ear is markedly good considering the amount of destruction present; consequently it is desired to keep away from radical operations. I have been seen and treated by many high class men. Any possible advice will be deeply appreciated.

M.D., Virginia.

ANSWER.—It is always advisable when a perforation of the drum membrane is present to prevent the entrance of cold water into the ear. Therefore, special precaution must be used when taking a shower bath or when swimming, by placing a fairly large piece of cotton, covered with petrolatum on both sides, into the orifice of the external auditory canal and then putting on a tight fitting rubber cap covering the ears. The danger of getting water into the ear is twofold: In the first place a caloric reaction may be caused producing vertigo, so that drowning may occur. Secondly, an acute infection of the ear is often induced. As long as the hearing is fairly good, if there is no cholesteatoma formation, together with the absence of headache or vertigo, no radical operation is indicated. If only a small amount of cholesteatoma is present, and it yields to a few irrigations of the attic with 70 per cent alcohol, operation may often be avoided. If some of the other symptoms mentioned, such as severe headaches and vertigo, appear, radical mastoidectomy is usually indicated.

CHILBLAINS

To the Editor:—Will you kindly inform me as to the methods that work the best in the treatment of chilblains? The patient I have reference to is a man, aged 24, in good health. He works at a filling station and has suffered for the past three winters from chilblains, which confine themselves to the toes of both feet and become very severe during the night. Please omit name.

M.D., Minnesota.

ANSWER.—The predisposition to chilblains is the important thing to combat. This is due to a tendency to "acrocyanosis," which in turn is due to faulty circulation or faulty nutrition or a combination of the two; and even focal infection may have a share in the persistence of the lesions. Hence the patient's general condition and mode of life should receive careful study. Foci of chronic infection that may lower the patient's resistance should be removed. His diet should be complete and adequate, with avoidance of excess of carbohydrate, if the patient is lean, or of excess of protein if the patient has a tendency to intestinal putrefaction. The condition of the peripheral circulation requires improvement, which might be secured by vigorous movements of the toes for a few minutes several times daily, while holding the foot well elevated.

Prolonged standing in cold and wet as well as sudden warming of the foot after it has become chilled should be avoided. This may be so difficult for the patient under discussion that it might be necessary for him to change his occupation.

The footwear should be warm, loose fitting and kept dry: no garters are permitted. If the patient has a tendency to damp feet, the socks should be changed as often as required. At such changing an alcohol rub might be of advantage.

Systemic medicinal treatment might aim at giving restoratives, if there is iron, vitamin or endocrine (e. g., thyroid) deficiency. Calcium (lactate) might be tried, if no other medicine seems indicated.

If this prophylaxis has failed and chilblains are present, deep vigorous proximal massage of the whole limb with the use of any desired lubricant—the medication probably is unimportant—and with brief, slow, gentle kneading of the affected part is probably the most important item. Immersion in a warm foot bath, followed by a dash of cold water, may well precede the rubbing. Periodic reversal of the galvanic current while the feet are immersed in warm water adds to the value of this exercise to the blood vessels. A cool evaporating compress, most especially at bedtime, gives comfort. Extremes of thermic treatment that may result in aggravation of the paretic vasodilatation must be strictly avoided.

HYPOGLYCEMIA

To the Editor:—A woman, aged 40, of Irish-German descent, whose weight is 153 pounds (69 Kg.) and whose height is 5 feet 4½ inches (163 cm.), apparently in good health, complains of craving for candy and cakes. She will eat a pound of candy or more at a time and half a cake or more. She will hide the sweets and will obtain them in every way possible. All blood and urine examinations give normal results. She has been under treatment in a hospital on a diet but still craves the sugars. She is ashamed of the craving, which has been present for a period of ten years. She often tries to break herself of the habit but is unable. Contrary to her previous treatment I advised her, after restrictions had failed, to have her candy as she wanted it, not to sneak it, and to feel free at any time to eat as she liked. Can you advise me as to cause, treatment and prognosis?

L. E. JEWELL, M.D., Meridian, Idaho.

ANSWER.—Repeated blood sugar determinations at the time of the patient's greatest craving might be worth trying, with a view to determining the existence of a hypoglycemia due to hyperinsulinism. If present, this might account for acute hunger and craving for sweets. In the absence of such manifestations the probability is that the condition rests on a psychologic basis and should be treated as such. The prognosis depends on the obesity that results; namely, an increased susceptibility to diabetes, hypertension and the degenerative diseases.

EXAMINATIONS AND MANIPULATION IN SACRO-ILIAC DISEASE

To the Editor:—In Queries and Minor Notes in THE JOURNAL, Dec. 15, 1934, page 1874, under the heading "Subluxation of Sacro-Iliac Synchondrosis," there was a discussion of various methods of examination and of treatment by manipulation of diseases of the sacro-iliac joint. Would you be so kind as to define for me the various tests which you note as being recommended by Dr. Lewin; namely, (1) the fabere test, (2) the Gaenslen test, (3) the Magnuson manipulation and (4) the Cox manipulation.

R. I. HARRIS, M.D., Toronto.

ANSWER.—1. The fabere test is sometimes referred to as the Patrick sign. With the patient lying supine, the right heel is placed just above the left patella. The right knee is allowed to drop toward the examining table. It should drop naturally. When the test is positive, the right knee is "hung up"; then the left heel is placed above the right patella. This test is indicative of a lesion of the hip joint or of its periarticular structures. The word fabere is not a man's name but is a combination of the first or first and second letters of the words flexion, abduction, external, rotation and extension.

2. In the Gaenslen test, with the patient's right leg projecting over the side of the examining table the patient grasps his left knee, flexing his knee and hip. He thus firmly secures the left half of the pelvis in flexion. The examiner then forces the right leg and thigh in hyperextension over the edge of the table, until the limit is reached. This maneuver produces a sort of "towel wringing" rotation movement of the pelvis and causes pain in an inflamed sacro-iliac joint. The completion of the test is performed with the left leg projecting and hyperextended after the right side has been hyperflexed.

105
935

3. In the Magnuson manipulation, under gas anesthesia the patient is placed on his back so that the limb to be manipulated juts out from the side of the examining table. The limb on the affected side is manipulated as in the Baer maneuver and from this position of hyperflexion is suddenly thrust into the position of hyperextension. The second maneuver consists in the surgeon locking his hands under the patient's lumbar spine and exerting a sudden upward pull in order to increase the lumbar lordosis. A tight binder is then applied.

4. The Cox manipulation is performed without anesthesia. The patient lies prone on the floor. He suspends himself on his forearms, holding on to some object, such as a radiator, and is manipulated as follows: The surgeon grasps both ankles, raising the patient's body from the floor. The patient's body is allowed to sag while sharp, sudden traction is applied to the affected leg. Sometimes an assistant makes a thrust on the sacral region.

PHRENICECTOMY IN CHILD WITH TUBERCULOSIS

To the Editor:—A child, aged 6 years, at a sanatorium, has an adult type of tuberculous lesion in the right lung field. There is a light apical infiltration and a dense basal infiltration with basal cavitation, as determined from roentgen examination. Because this type of disease is peculiarly fatal in childhood and because the left lung is practically clear of disease, the question of collapse therapy has been considered. Phrenicectomy has been suggested because of the predominantly basal type of lesion but was rejected because of the likelihood of producing severe deformity of the child as it developed. Can you inform me through the columns of THE JOURNAL as to the youngest patient in whom phrenicectomy has been performed? What deformity has been produced by the operation in young patients as they continue to grow? Theoretically is phrenicectomy likely to produce deformity as the child develops? Is phrenicectomy likely to produce greater skeletal deformity as the child grows than would collapse of the lung by artificial pneumothorax? Please omit name.

M.D., Massachusetts.

ANSWER.—In a girl, aged 8 years, who received phrenicectomy, and a girl, aged 6 years, who received pneumothorax, there has been no visible skeletal deformity, the collapse being present two years and one year respectively. The Germans report collapse therapy performed in infants, even with the childhood type of primary infection, claiming thereby to reduce fatalities incident to a generalized miliary tuberculosis or a tuberculous meningitis. The phrenicectomy per se will not produce deformity. The type of lesion described in the question is always and of itself accompanied by considerable deformity. In the event of natural healing, this deformity will tend to increase as the child grows. Chest changes of a degree dependent on the extent of the lesion will result from the intrathoracic disease. These changes will be retraction of the chest wall, depression of the supraclavicular and infraclavicular fossa, narrowing of the rib interspaces, flaring of the scapulae, atrophic changes in the muscles and, if continued over a long period of years, a scoliosis of the dorsal spine; but collapse therapy when performed in time will tend to limit rather than exaggerate the deformity. The procedure tends toward a prompt suppression of the disease and consequently toward an amelioration of the deformity resultant on the disease. Phrenicectomy is not likely to produce any greater skeletal deformity than would collapse of the lung by artificial pneumothorax. As to the advisability of collapse therapy, it is a known fact that the adult type of pulmonary tuberculosis in children presents a very poor prognosis. Consequently, in estimating the indication, the question of deformity, which anyway is inherent in the lesion itself, has little weight in face of the usual outlook for a rapid spread of the disease and death.

SCLERODERMA

To the Editor:—In Queries and Minor Notes I have often noted a great many important problems solved for the general practitioner. I therefore take the liberty of writing you to ask about a case of scleroderma that has come under my care. A woman, aged 34, married and the mother of two children, has for the past two years had this disease. She has had a thoracic ganglionectomy, thyroid therapy, ketogenic diet therapy supported by ammonium chloride, also massage and diathermy treatments and pancreatic extract therapy (insulin free). All of these without benefit. What is known about parathyroidectomy in this disease and what other means of therapy would you suggest? Please omit name.

M.D., Florida.

ANSWER.—The therapy of generalized scleroderma presents great difficulties and, according to the experience of authorities who have written on the subject, there is no specific form of treatment that is available. Improvement has occasionally been reported after the use of thyroid extract and pancreatic extracts, but it has been found by most observers that almost all methods of treatment have been palliative and not curative. There have been a number of reports of pathologic calcification in the skin of patients suffering from scleroderma. In a case reported by Basch, Leibovici, Durupt and M. Basch (*Bull. et mém. Soc. méd. d. hôp. de Paris* **50**:516 [April 2] 1934) a woman, aged 43, presented a clinical picture of scleroderma complicated by patches of calcification in the skin and about the joints. These changes had been preceded by Raynaud's syndrome. Parathyroidectomy was performed in combination with periarterial sympathectomy of the brachial artery. Some improvement in the condition of the skin is reported, which was attributed to the periarterial sympathectomy. There are further papers on this subject by Wessenbach (*Bull. Soc. franç. de dermat. et syph.* **40**:1439 [Feb.] 1934) and by B. Paggi (*Policlinico* [sez. chir.] **41**:371 [July] 1934).

TREATMENT OF SYPHILIS—BISMUTH "GRIP"

To the Editor:—Last summer I began antisyphilitic treatment of a 4 plus woman, aged 33. I gave her five injections of neoarsphenamine, 0.45 Gm. Each injection caused much generalized aching over the body and each successive injection made the aching much worse. She became discouraged and stopped treatment. This winter she returned for further treatment. I began with injections of a bismuth compound in the hip. These caused the same aching, only worse. By the time she had the fifth injection she had to go to bed. All joints were swollen and red, and aching was severe. She had to be turned in bed on a sheet for three days. The treatment was stopped and the aching is slowly leaving and the joints are returning to normal. Is this a Herxheimer reaction? How am I going to treat this patient? She received the neoarsphenamine every sixth day and the bismuth compound every fourth day. If you tell me to give less intensive treatment, may one expect a cure in the same length of time or does it take longer?

M.D., Kansas.

ANSWER.—In the first place, it is difficult to understand what is meant by a "4 plus woman." It would be much more satisfactory in answering this query if more information were available as to the evidence of the syphilis in the patient. Simply a "4 plus woman" means little when one considers the many possibilities, and also the type of laboratory that may have made the reaction. Probably the generalized aching has nothing to do with syphilis, either after the arsenical injections or after the bismuth injections. It certainly is not a Herxheimer reaction.

It is to be recommended that the patient be very carefully examined. If the blood Wassermann really shows a 4 plus reaction, it might be well to do a lumbar puncture as well, and if evidence of syphilis is really found perhaps start her off on a preliminary course of mercury rubs, if she has the symptoms spoken of, giving her 4 Gm. of the 50 per cent official ointment as a rub every night, and considering a course of from sixty to eighty rubs as a course of treatment. Perhaps following this one might try the neoarsphenamine again in small doses, using doses, say, of 0.3 Gm. every seven days. We would be much interested to learn if the patient has any further reaction. Frankly, we are inclined to feel that there must be some other explanation for these reactions. It is true that there is a condition known as "bismuth grip." The patient, after having had quite a lot of bismuth injections, begins to have vague symptoms of headache, pain in the bones and muscles, and discomfort of that type, which will continue until the bismuth is stopped. Anything of this sort after arsenic, if it occurs at all, is most unusual, and for it to have come on so acutely at the onset of treatment seems out of all reason.

USE OF INTERFEROMETER IN DETERMINING BENZENE FUMES

To the Editor:—March 29 you very kindly sent me some reprints from Queries and Minor Notes giving the effects of naphtha and other constituents of lacquers and in one of these it stated that an interferometer should be used to find out the quantitative determination of benzene fumes. Subsequently I wrote asking where one of these could be obtained, whether they had to be bought or whether they could be rented, but I heard nothing from you.

GEORGE N. PRATT, M.D., Neenah, Wis.

ANSWER.—The best known type of interferometer is the Zeiss, which is listed in the catalogues of the principal laboratory equipment supply houses. The current catalogue of the Arthur H. Thomas Company (West Washington Square, Philadelphia) contains not only a description of this apparatus but a number of citations from the literature as to various fields of its usefulness. In this country the Barrett Company of New York, producers of benzene and other hydrocarbons, have carried out many tests of hydrocarbon concentrations under industrial conditions, using an interferometer. The U. S. Bureau of Standards possesses extensive accumulated data on the use and worth of this instrument.

It should not be understood that this device is either inexpensive or readily usable. The initial cost of the instrument is in excess of $500. Thereafter it may become necessary to obtain calibration from time to time to assure reliable results. The

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193

instrument is of restricted value under many industrial circumstances, owing to the fact that benzine, benzene, naphthas, toluene and xylene rarely are used as single entities but as mixtures with various esters, acetates, alcohols and glycols. This fact precludes any ready standardization of the apparatus to meet the diversity of vapor conditions likely to be encountered.

HEREDITY IN HYDROCEPHALUS

To the Editor:—A married woman, aged 29, white, has had two pregnancies (five years apart), each of which resulted in a child deformed by the presence of meningoceles, the first time in the cervical, the last time in the lumbar region. Hydrocephalus formed in the first and is also present in this last child (now aged 2 months). The woman's past history is essentially negative and physical examination is negative. The Wassermann reaction is negative and the urine normal. However, during pregnancy her appetite becomes voracious and she gained between 85 and 100 pounds (38 and 45 Kg.) during each pregnancy, which weight she subsequently lost during the year following delivery. Her thyroid is enlarged during pregnancy (noticeably) but no other abnormalities can be detected. Her usual weight is 145 pounds (66 Kg.) and she is 65 inches (165 cm.) tall. Labor is easy. Is it likely that any further pregnancies will result similarly? Any suggestions as to cause and treatment will be appreciated. The husband appears normal and there is no family history of anything similar. If published please omit name.

M.D., New Jersey.

ANSWER.—A review of the literature does not prove that there is a distinct hereditary element in spina bifida and hydrocephalus, but enough cases are on record to make one believe that a repetition of these abnormalities cannot be denied. There are many cases on record of large families with only one such deformity. The cause of such monstrosities is not known, but defective germ plasm is generally assumed. A diseased endometrium may cause a defective germ plasm and a diagnostic curettage might be helpful therapeutically. The theories that avitaminosis and endocrine abnormalities are causative of monstrosities have little, if any, present support. Since the patient gained such an enormous number of pounds during each pregnancy, the endocrine theory would seem to be a plausible explanation and treatment along the lines of prevention of obesity offers some hope of cure. Our knowledge of the growth hormones of the anterior pituitary body is not sufficiently large to assign to this organ a rôle in the production of monstrosities.

EPILEPSY AND PREGNANCY

To the Editor:—Within the past year I have inherited two petit mal cases. I delivered the first patient, aged 19 years, of her first baby. She has been treated by neurologists, gynecologists and surgeons for the last ten years. They all had held to the possibility of improvement following delivery of a baby. Her history dates back to a fall of some 12 to 15 feet from a swing, at which time she was unconscious for ten or fifteen minutes. I can see no improvement since delivery four months ago and subsequent nursing of the baby. Have I done wrong in permitting the mother to nurse the baby? The second patient, a woman, aged 29, had one pregnancy nine years ago. She has been having seizures for the last nine years. She also has been to several specialists, neurologists, psychiatrists and gynecologists. Both patients came to my care taking 1½ grains (0.1 Gm.) of phenobarbital twice a day, and regular cathartics daily. Both patients are discouraged. Is there anything further to offer them? Please omit name.

M.D., New York.

ANSWER.—There is no justification for believing that pregnancy or parturition will cause cessation of epileptic seizures, although during pregnancy there is sometimes a temporary improvement; on the other hand, the frequency of seizures sometimes becomes greater during pregnancy. There is no reason for assuming that an epileptic woman should not nurse her child. The situation as to prognosis and therapy is not changed by the fact of parturition.

TREATMENT OF KERATOSIS OF LIP

To the Editor:—I have under my care a white man, aged 38, suffering from keratosis of the upper lip, a patch about 1 cm. in diameter. This has been present for the past three years with repeated scaling and peeling. It is not disfiguring but is slightly painful. He has tried various treatments, including x-rays, radium and the electric needle, but it returns again. The specialist advises surgery but the patient is afraid of scarring and contraction of the lip. Is surgery necessary? Cold cream is as good a treatment for this condition as anything he has tried. What would you suggest? Please omit name.

M.D., California.

ANSWER.—No hint is given as to the kind of keratosis meant. If senile keratosis is intended, the location and the patient's age make it an unusual case. Senile keratosis will not resist x-rays or radium, if correctly applied. Surgical procedures should not be necessary. It would be wise to have a dermatologist see the patient, make the diagnosis and direct the treatment.

INDIGESTION WITH NORMAL ACID VALUES

To the Editor:—Will you please comment on the following analysis:

Time	Free Acid	Total Acid	Blood	Bile	Mucus	Lactic Acid
Fasting	Negative	5	Negative	Negative	Trace	Negative
20 minutes	29	44	Trace	Negative	Trace	Negative
40 minutes	34	55	Trace	Negative	Trace	Negative
60 minutes	25	41	Trace	Negative	Trace	Negative
80 minutes	10	24	Trace	Negative	Trace	Negative
100 minutes	Negative	30	Trace	Negative	Trace	Negative

All the man complains of is a lot of gas and a coated tongue. There is no pain in the stomach. Sometimes a few pains occur in the lower part of the abdomen. He had been taking fifteen drops of dilute hydrochloric acid three times a day for two months when this analysis was made. I would appreciate any comment you can make relative to diet or treatment. The patient is 38 years old and is a mine clerk. If published, please omit name.

M.D., Utah.

ANSWER.—The complaints of coated tongue and "gas" coupled with relatively normal acid values in the stomach are common. The patient should be given the benefit of a thorough investigation, including a cholecystogram, gastro-intestinal roentgenograms, and blood, urine and stool analyses. In addition, a careful inquiry should be made into the patient's past history for evidence of acute or chronic infections or ingestion of alcohol. If no organic lesion is found, diet and bowel regulation should control the symptoms. Fatty, greasy, fried and spicy foods, condiments, pies, pastry, candy, coffee, tea, alcohol, tobacco, pork, cabbage and apples should be omitted. Foods allowed include eggs (not fried), milk, toast, cooked fruits and vegetables, boiled chicken or beef and broiled lamb chops and cottage cheese. The bowels should be kept moving regularly. The gastric analysis reveals sufficient acid for normal digestive processes and the ingestion of additional hydrochloric acid does not produce extra benefits.

PLUMBISM IN A CHILD

To the Editor:—Recently I have become interested in a case of plumbism in a child, aged 16 months. The source of the lead was the paint on the crib and play yard. The roentgenogram shows slight deposits of lead in the bones around the elbow, knees and ankles. 1. What is the usual procedure of eliminating this lead from the body? 2. What are the probable effects of the lead if it should be left alone entirely? 3. Is the presence of the lead any contraindication to given serum injections, such as toxin-antitoxin? 4. Will the presence of the lead tend to accentuate any subsequent fever or illness that the child may develop? Please omit name.

M.D., Massachusets.

ANSWER.—1. Removal of lead from the body (or deleading) may be accomplished by inducing an acidosis or an alkalosis, by deprivation of calcium, or by the administration of parathyroid extract.

2. If the lead is left alone it will probably be gradually excreted from the body over a period of time. A child who harbors lead in the bones and who has been symptom free might again show symptoms of lead poisoning during an acute infection.

3. The presence of lead in the bones would be no contraindication for the giving of serum injections.

4. The presence of the lead would not accentuate any subsequent fever or illness that the child might have. However, the illness might cause the reappearance of the symptoms of lead poisoning.

EFFECTS OF KEROSENE ON SCALP

To the Editor:—Your answers to the following questions will be greatly appreciated: 1. What will be the effect of the use on the scalp of deodorized kerosene 87 per cent; resorcinol 3 per cent and lanum 10 per cent. 2. What will be the effect of the use of the foregoing on the scalp over a long period of time? 3. What will be the effect of kerosene known and designated as water white kerosene, if used in the foregoing proportions in place of deodorized kerosene? 4. What will be the effect of kerosene alone on the scalp? 5. In the event that kerosene is rubbed briskly into the scalp, if it is confined by the patient wearing a hat immediately after application would this have a tendency to blister the scalp?

V. L. CHAMBERS, M.D., Huntington, W. Va.

ANSWER.—1. The combination of the deodorized kerosene, resorcinol and wool fat makes a good scalp stimulant. A few scalps may be irritated by too much of it for the kerosene is quite strong.

2. Used over a long period, the tendency of resorcinol to color the hair green must be considered. This can be avoided by the use in place of it of resorcinol mono-acetate.

3. Ordinary white kerosene will have the same effect as the deodorized, except in respect to odor.

4. Stimulating.

5. Pure kerosene will blister some scalps even though not covered at once. The kerosene had best be diluted.

105
935

TREATMENT OF NEUROSIS

To the Editor:—I have a middle aged patient who is moderately neurotic. He lives what neurologists term an "irritated existence"; i. e., there are conditions in his life which seem impossible to change and which are more or less of a constant irritation. He is conscious of his own "jumpy" condition and during business hours, for business reasons, he makes an unusual effort to "cover up" his condition and to be "agreeable." At the end of the day he is "all in." Is this the proper way to conduct himself in order to get the best results? Please omit name.

M.D., Missouri.

ANSWER.—Without more knowledge of the facts it is not possible to give advice of value. The only alternative to the plan now being followed suggested in the question seems to be that the patient should not "cover up" and should be "disagreeable." This certainly does not seem a more "proper way" to get the best results. It may be suggested that when conditions cannot be changed the best method to be followed is to try to find some activity that will furnish compensatory satisfactions for those which are being missed. Much will depend on the nature of the conditions to be faced. On the other hand, it is possible that conditions alleged as cause for the "irritation" are not the real cause but are merely a convenient peg on which to hang the trouble, much as emotional dissatisfaction and conflicts may be diagnosed as irritable heart, dyspepsia or colitis.

MORPHINE IN SOLUTION

To the Editor:—In the series of articles on "Therapy of the Cook County Hospital," appearing in THE JOURNAL, the following prescription is given in the article on "Pain" (THE JOURNAL, Dec. 22, 1934, p. 1944):

PRESCRIPTION 13.—*Morphine Sulphate for Injection*

℞ Dilute hydrochloric acid ..... 0.05 cc.
Morphine hydrochloride ..... 0.10 Gm.
Distilled water, q. s. ad ..... 10.00 cc.

Concerning this I should like to ask: 1. How long will such a solution remain stable and potent, if used only infrequently? 2. Can the dose of morphine be increased so that 1 cc. would equal 0.015 instead of 0.01 Gm.? 3. Can atropine (1 cc., 1/120 grain) be added to the solution? 4. May the sulphate be used instead of the hydrochloride? 5. Can it be sterilized in the ordinary office electrical sterilizer and kept in an insulin bottle?

M.D., New York.

ANSWER.—1. Probably for several months.

2. Yes.

3. Yes, but only if the material is to be used up in a relatively short period as solutions of atropine salts deteriorate fairly rapidly.

4. Yes.

5. Yes, but excessive heating should be avoided as solutions of morphine are said to decompose rather readily above 60 C.

GASTRIC ACIDITY AND ADMINISTRATION OF HYDROCHLORIC ACID

To the Editor:—Can you give me information or references regarding the effect on the acid-base balance of the body, especially the blood, of oral administration of hydrochloric acid in large therapeutic doses, and excess doses, in normal conditions, hypo-acidity and hyperacidity? Also do you know of a good standard for children's gastric acidity, comparable to that of Vanzant and Alvarez for adults? My rather prolonged search in the literature has thus far been rather fruitless for these two problems, and any aid you can give will be most gratefully received.

MARY LOVELESS, M.D., New York.

ANSWER.—The oral administration of hydrochloric acid in any dose causes a lessening in the reserve alkali of the system in a degree proportional to the size of the dose, and this occurs in normal conditions as well as in hypo-acidity and hyperacidity. Knowledge of the gastric contents of infants and children is still rather meager. In infants, Marriott and his co-workers found the acidity to vary between a p_H of 3 and 4, with an average of 3.75.

QUININE IN MULTIPLE SCLEROSIS

To the Editor:—I note in THE JOURNAL of May 11 an inquiry with regard to multiple sclerosis. You state that quinine hydrochloride should be used in every case. I have been attending a woman who has had multiple sclerosis for several years. I have tried almost everything but the quinine hydrochloride, with no improvement. I should like to know your method and the doses that should be given.

L. C. BARNES, M.D., Hamburg, Ark.

ANSWER.—Quinine hydrochloride is given by mouth, starting with one-half grain (0.03 Gm.) three times daily for one week, then three-fourths grain (0.05 Gm.) three times daily for the second week, 1 grain (0.065 Gm.) three times daily for the third and fourth weeks and finally 1½ grains (0.1 Gm.) three times daily for at least six months. Fluids should be pushed to the maximum at all times.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. *Applications for written examination should be filed with the secretary before Jan. 15.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: St. Louis, Nov. 18. Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: St. Louis, Nov. 20. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 30. Sec., Dr. Walter Freeman, 1726 Eye St., N. W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA: *Basic Science.* Tucson, Dec. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Basic Science.* Little Rock, Nov. 4. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular).* Little Rock, Nov. 12. Sec., State Medical Board of the Arkansas Medical Society, Dr. A. S. Buchanan, Prescott. *Medical (Eclectic).* Little Rock, Nov. 12. Sec., Dr. Clarence H. Young, 207½ Main Street, Little Rock.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 4. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Medical (Regular).* Hartford, Nov. 12-13. *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, Nov. 12. Sec., Dr. Joseph H. Evans, 1488 Chapel Street, New Haven.

FLORIDA: Tampa, Nov. 11-12. Sec., Dr. William M. Rowlett, Box 786, Tampa.

KANSAS: Topeka, Dec. 10-11. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 3. Sec., Department of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MAINE: Portland, Nov. 12-13. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1211 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: *Part III.* Boston, Nov. 5-7. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: Lincoln, Nov. 19-20. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 4. Sec., Dr. Edward E. Hamer, Carson City.

OHIO: Columbus, Dec. 3-5. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Basic Science.* Portland, Nov. 16. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 12. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TEXAS: Houston, Nov. 18-20. Sec., Dr. T. J. Crowe, 918 Mercantile Building, Dallas.

VIRGINIA: Richmond, Dec. 11-13. Sec., Dr. J. W. Preston, 28½ Franklin Rd., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

Louisiana June Examination

Dr. Roy B. Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, June 6-8, 1935. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. One hundred and three candidates were examined, all of whom passed. Three physicians were licensed by reciprocity. The following schools were represented:

School	PASSED Year Grad.	Per Cent
University of Colorado School of Medicine	(1933)	83.1
Indiana University School of Medicine	(1930)	75.9
Louisiana State University Medical Center	(1935)*	80.2, 81.6, 81.6, 81.8, 81.8, 81.9, 82.2, 82.4, 82.6, 82.7, 83.4, 83.4, 83.4, 83.5, 83.5, 83.8, 83.8, 84, 84.2, 84.4, 84.5, 84.8, 85.3, 86.2, 86.3, 86.5, 86.6, 88, 88.2, 89, 89.3, 90.2, 90.7
Tulane University of Louisiana School of Medicine	(1934)	81.6, 82, (1935) 78.9, 79, 80.1, 81.1, 81.2, 81.4, 81.4, 81.6, 81.8, 82, 82.1, 82.3, 82.5, 82.5, 82.6, 82.8, 83, 83, 83, 83.1, 83.2, 83.4, 83.6, 83.6, 83.6, 83.7, 83.7, 83.9, 83.9, 84.1, 84.1, 84.1, 84.1, 84.3, 84.3, 84.3, 84.5, 84.5, 84.6, 84.6, 84.7, 85, 85, 85.1, 85.1, 85.1, 85.4, 85.4, 85.4, 85.6, 85.8, 85.8, 85.9, 86.3, 86.4, 86.4, 86.7, 86.9, 87.1, 87.6, 88.1, 89
University of Cincinnati College of Medicine	(1933)	82.6
Baylor University College of Medicine	(1935)	77.8, 81.5

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Maryland School of Medicine		(1908)	N. Carolina
Meharry Medical College		(1932)	Tennessee
University of Texas School of Medicine		(1930)	Texas

* These applicants have received an M.B. degree and will receive an M.D. degree and Louisiana license on completion of internship.

Tennessee March Examination

Dr. H. W. Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Memphis, March 25-26, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Twenty-three candidates were examined, 22 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Howard University College of Medicine		(1930)	85.8
St. Louis University School of Medicine		(1934)	84.6
University of Tennessee College of Medicine		(1935)	77.8, 78.5, 78.5, 79.3, 79.4, 79.6, 80.3, 80.5, 80.8, 81.3, 81.5, 81.6, 82, 82.8, 83, 83.8, 84.5, 85.8, 86.6, 87

School	FAILED	Year Grad.	Per Cent
University of Tennessee College of Medicine		(1935)	73.8

Book Notices

Obstetrics for the General Practitioner. By J. P. Greenhill, B.S., M.D., F.A.C.S., Professor of Gynecology, Loyola University School of Medicine, Chicago. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, $4. Pp. 304, with 39 illustrations. New York: National Medical Book Company, Inc.: Doubleday, Doran & Co., Inc., 1935.

The author has developed a small book on obstetrics for the general practitioner. It is brief but not in compendium or notebook style. The book is divided into twenty chapters, which are in logical sequence. For ready reference each chapter in turn is broken up by the conventional headings of etiology, pathology, symptoms, diagnosis, prognosis and treatment. This orderly arrangement contributes materially to the usefulness of the work. There is an especially well chosen group of illustrations, lent by Dr. J. B. De Lee from his textbook.

The chapter on the management of labor is one of the most practical; the one on hydatidiform mole and chorionepithelioma is completely covered from a scientific standpoint but with brevity and clarity; the chapter on placenta praevia is particularly well written and an excellent guide in this dangerous situation.

Greenhill must have debated long with himself before deciding to include a chapter and numerous illustrations on the technic of various methods of cesarean section. He does so "because in many small communities the general practitioner or general surgeon must perform these operations." This is a concession to bad obstetric practice which might better have been omitted in these days of good roads and generally good transportation facilities. Cesarean section is distinctly not an operation for general practitioners or general surgeons, as its high mortality rate attests. The space might profitably be devoted to somewhat more instruction to the general practitioner on the early recognition of conditions often requiring cesarean section.

The chapter on puerperal infection is an excellent one, although containing scarcely enough emphasis on the methods of its prevention and the responsibility of the attending physician in this. Nevertheless, this all appears in the earlier chapter on the management of labor, if the practitioner will read these two chapters together.

The sections on antepartum care and the management of labor occupy only twenty-three pages and include the only discussions on contracted pelvis, postpartum hemorrhage, and asphyxia of the new-born. By contrast, seven pages are devoted to the etiology of abortion and miscarriage, nine pages to polyhydramnios, and slightly more than one page to oligohydramnios. Ten pages are given to syphilis, but gonorrhea is not mentioned specifically. The care of the new-born is mentioned only incidentally. Uterine inertia and hydrocephalus do not appear in the index. Four pages are devoted to the dystrophia dystocia syndrome and sixteen to local anesthesia in obstetrics, which is recommended throughout the work whenever anesthesia is required. There is no detailed discussion of other anesthetic agents, and analgesia is covered in a sketchy fashion.

The methods of treatment and procedure that are advocated are eminently sound, but it requires knowledge and insight to interpret the directions given. Frequent auscultation of the fetal heart tones is recommended strongly but there is no statement concerning the interpretation of variations in their rate and rhythm. Episiotomy is well discussed and illustrated, but perineal lacerations, even those involving the rectal sphincter, are omitted except for a statement that they should be repaired if the patient's condition permits.

The book is of a convenient size, attractively bound in red and gold, and well printed. With its appearance, and the wise counsel within its pages, it should be a valuable addition to the library of all general practitioners doing obstetric work.

Über die primären Tumoren des Sehnerven und der Sehnervenkreuzung. Inaugural—Dissertation. Von Åke Lundberg, Med. Lic. Paper. Pp. 164, with 28 illustrations. Stockholm: Nordiska Bokhandeln, 1935.

In this monograph the nature of optic nerve tumors is considered in the light of observations obtained by modern neurohistologic methods. The author studied material from ten cases and in view of the probable embryologic origin of many of these tumors a study of the embryology of the optic nerves was included. In his review of the literature proper credit is given to the important works of Hudson (1912) and of Verhoeff (1922). These authors had decided that most tumors of the nerve itself should be classified as gliomas. The use of modern methods of study may be said to begin with del Rio-Hortega, who found that most optic nerve tumors were oligodendrocytomas. A table of all cases reported since the work of Hudson is included (114 cases). In studying his material the author employed besides the usual stains Holzer's glia stain and Fincher's modification of the Hortega silver and gold impregnation method. The author's ten cases included five tumors of the intra-orbital portion of the optic nerve, two of the intracranial portion and three involving the intracranial portion and optic chiasm. In two cases only postmortem (museum) material was available without a clinical history. In six cases the material was obtained at operation and in two post mortem. The five cases involving the orbital portion of the nerve showed certain similarities in their clinical course. All were in children from 3½ to 10 years of age. In all the principal symptom was unilateral exophthalmos with optic atrophy, which in some cases was simple and in others accompanied by papilledema. All were removed successfully and showed no recurrence after a period of from one to seventeen years. This was in spite of the fact that three tumors could not be removed completely on account of extension through the optic foramen. In two of these cases such extension could be diagnosed preoperatively by roentgenograms showing enlargement of the optic foramen. This relatively benign nature of optic nerve tumors has been noted by other observers, especially Hudson.

The review of published cases involving the intracranial portion of the nerves and chiasm with his own cases is of importance not only to the ophthalmologist but to the neurologist and neurologic surgeon. Such cases are seldom accompained by exophthalmos and in many cases loss of vision with field changes is the only sign available for diagnosis. Differential diagnosis from other conditions causing optic atrophy is sometimes difficult and the author believes that a number of cases of unexplained blindness are due to such tumors. All his cases but one proved on histologic examination to be gliomas of the type of oligodendrocytoma. In some material a number of astrocytes was found. One case of meningioma involved the intracranial portion of the optic nerve in front of the chiasm. Meningiomas of the intracranial portion must arise in this region, tumors behind this point being of necessity gliomas. From his own and other published data in which material was available since the report of Hudson, the author found that seventy-five tumors were gliomas, twenty-nine meningiomas and nineteen of uncertain nature. A characteristic difference between the gliomas and the meningiomas was the age of incidence. Most gliomas involved children, the average age at

time of operation being 12 years, while meningiomas affected older persons, the average age being 25 years. The gliomas involving the nerve always cause loss of vision before exophthalmos is noted, whereas the opposite is the case with meningiomas of the orbital portion. In the case of small children the loss of vision often passes unperceived until exophthalmos occurs. In diagnosis the roentgenograms were only occasionally of value. Intracranial extension of an intra-orbital tumor could sometimes be diagnosed by enlargement of the optic foramen, and in tumors of the intracranial portion erosion of the anterior clinoid processes and undermining of the roof of the optic foramen were sometimes observed as well as calcium shadows in the tumor.

Many other points of interest in this group of conditions are included in the monograph, which presents the most complete review of its subject that has so far appeared.

The Determination and Control of Industrial Dust. By J. J. Bloomfield, Sanitary Engineer, U. S. Public Health Service, and J. M. DallaValle, Assistant Sanitary Engineer, U. S. Public Health Service. Prepared by direction of the Surgeon General. United States Treasury Department, Public Health Service. Public Health Bulletin No. 217. Paper. Price, 15 cents. Pp. 167, with 77 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1935.

At present the workmen employed in the dusty trades form the largest group exposed to any one industrial hazard—a hazard with high morbidity and mortality rates from respiratory diseases as well as systemic poisoning in the case of toxic dusts. The composition, quantity and particle size are the properties producing definite damage. The present bulletin gives the methods and instruments now used for dust studies, the interpreting of results, and their practical applications, especially in regard to control. The volume is meant as a guide to engineers, chemists and others interested in minimizing dust hazards to health. Of the five instruments of choice, that developed largely by the Public Health Service (1922) known as the Greenburg-Smith impinger is recommended as the most adaptable for all around dust determinations, although each of the others has its special field. Probably the bulletin was already in press before a description of the "hot wire" method of Greene was published in England (1934), the inventor of which claims that it is of far greater accuracy. After discussing "the quantification" of dusts, i. e., the determination of quantities present by use of the various instruments, the bulletin details their character and composition, petrographic and chemical examinations, and the application to practical problems. The last six of the twelve chapters concern methods of dust control, principally from the plant engineering standpoint, with various formulas and charts for measuring adequacy, although the last chapter devotes eight pages to personal respiratory protection (respirators, masks and helmets). There is an accompanying bibliography. This whole question is at present in a condition of flux, so that little can be accepted as definitely settled except that there is some definite relation between some inhaled dusts and disease; but studies like the present one are certainly showing the way out, and the authors as well as the Public Health Service are to be complimented on a fine contribution and encouraged to go on.

La maladie des pêcheurs d'éponges nus. Par Skévos Zervos. [Extrait de "Paris médical," No. du 4 août 1934]. Cloth. Pp. 29, with 16 illustrations. Paris: Librairie J.-B. Baillière et fils, [n. d.].

For many years the sponge fishermen of the island of Calymnos (in Grecian waters), who search for sponges off the islands of Crete and Chypre and in the African seas, have lived in dread of a strange disease, which seemed to attack only them or their fellowmen who worked with fresh sponges. The disease first manifests itself by a sharp stinging pain at almost any portion of the body, but chiefly on the anterior regions. Quickly this initial spot becomes red and swollen and within a few hours may change from red to purple or almost black. Within a short time systemic involvement arises, characterized by headache, nausea, intense fever and chills, sometimes lasting for several days or weeks. The pain is usually general and is most intense about the open wound, which is slow to heal, is prone to necrose, and may eventuate in an abscess. Always healing is slow and painful. Attacks of this character again and again have been the lot of these sponge fishermen. While death is only occasional, the intensity of the pain is such as to make the fishermen continually apprehensive as they go about their work.

This publication is the story of Skévos Zervos's study of this occupational disease. First in 1903 he presented its description to the second Panhellenic Congress, and again in Paris at the Academy of Medicine. In the ensuing years Dr. Zervos has established many unusual features of the nature of the disease and its control. The cause was found to be an animal parasite, the "actinion," belonging to the Zoanthes, and homogenous to the Actinidea. The parasite is approximately 4 or 5 cm. in length. Two rows of minute fingerlike projections occasion the name "actinion," which signifies "ray" formation. The parasite lives attached to the roots of the sponges at the bottom of the sea. As the sponge fisherman uproots the sponges and fills the net bag hung around his neck in front of his body, the disturbed actinion discharges from its mouth its venemous material, which is described as "white, of viscous consistency, like half-dried nasal secretion." The actuality of poison within the parasites is attested by the use of dried actinions by these fishermen for killing off undesirable animals, such as rabid dogs. Dr. Zervos describes various types of treatment, such as "cupping" the fresh wound and the application of liquid ammonia. It seems somewhat bizarre that with so large a parasite the fishermen should not long ago have determined the cause of the malady. Whatever may have been their extent of knowledge, much has been accomplished by Dr. Zervos in protecting them. Through education, improved therapeutic measures, prevention of infection and careful supervision of the sanitation of boats and docks, this disease, never direful, has been brought under control. In gratitude the population has termed its occupational disease the "malady of Skévos Zervos." The author in turn has dedicated his small book to his dear compatriots who have had this disease by the thousand. The challenge of interest is a desideratum of any publication. At every turn this little book extends that challenge. Apparently a remotely situated physician found an unknown disease; he determined the cause, classified the parasite, established the manifestations, created a suitable treatment, and banished the fears of an apprehensive population. Written in a simple, naive style, it contributes its own small bit to the solution of occupational disease problems.

Text-Book of Urology for Students and Practitioners. By Daniel N. Eisendrath, M.D., Consulting Urologist to the American Hospital, Paris, France, and Harry C. Rolnick, M.D., Clinical-Professor of Genito-Urinary Diseases, Loyola University Medical School, Chicago. Third edition. Cloth. Price, $10. Pp. 942, with 711 illustrations. Philadelphia and London: J. B. Lippincott Company, 1934.

This work has had considerable success among students of medicine and busy practitioners. The authors themselves state that their work was written primarily to fulfil the definite need for such a textbook, which would present the whole subject of urology in "the simplest possible manner" to "meet the needs of beginners." This laudable ambition has been accomplished in an admirable manner. One hundred and sixty-two pages are devoted to elementary subjects relative to genito-urinary diseases, 100 pages to the venereal diseases, and the remaining pages to diseases of the genital organs, bladder, ureters and kidneys and to urologic surgery. Diseases of the male genitalia, not infrequently slighted in the past, are covered in a thorough manner. The chapters on venereal diseases are complete and of value to both students and practitioners.

Every effort has been made to facilitate and render quick and sure the teaching of urology. Seven hundred black and white and eleven colored illustrations, many schematic drawings, tables for differential diagnosis, and pictures of operations, step by step, all impress the mind quickly and deeply.

The use of black letter emphasis to the paragraph headings and to important matters may be helpful to some but is confusing and obstructive to smooth, easy reading.

Three new pages on intravenous urography have been added to the chapter on radiography and eight pages on electroresection of the prostate. Otherwise the book shows little change from previous editions. The illustrations are on the whole good and have been drawn from a large number of sources. The style is more that of a compend or outline of urology, presenting the main facts as briefly as possible.

For the student this book has a definite value, and teachers may recommend it with safety and assurance. For the advanced urologist or the research worker or for purposes of reference it is not so useful. However, it fulfils a distinct need.

V 1
193

Nutrition Work with Children. By Lydia J. Roberts, Professor and Chairman of the Department of Home Economics, The University of Chicago. Second edition. Cloth. Price, $4. Pp. 639, with 18 illustrations. Chicago: The University of Chicago Press, 1935.

Nine years has elapsed since the first edition of this book became available. During that time notable advances have been made in many different aspects of the subject. There have been extended and detailed studies of the growth and development of children. New types of foods have been prepared especially applicable to the child's needs. The Conference on Child Health held in 1930 brought together a considerable number of specialists who by the exchange of their views consolidated opinion on many debatable topics. The new advances have been given careful consideration in the revision of this book, which now constitutes the most extensive and perhaps the best available book on this special subject. The volume begins with an introduction showing the needs for nutrition work; then come definitions of terms and methods of judging nutrition, and analyses of the various studies that have been made of growth at different times and seasons. The causes and effects of malnutrition are considered as well as its prevention and treatment. Then come the constructive features of the volume, which describe the nutrition program in the school, the teaching of nutrition at various grades and other aspects of nutritional work in schools as well as that carried on by special agencies. Each of the chapters is supplemented by a bibliography and there is a fine collection of references to health materials for use in teaching. The index is adequate and indicates the greatly enlarged scope of this work.

Socialization of Medicine. Compiled by Julia E. Johnsen. The Reference Shelf, Volume X, Number 5. Cloth. Price, 90 cents. Pp. 335. New York: H. W. Wilson Company, 1935.

The H. W. Wilson Company has for some years prepared under the general title "The Reference Shelf" a series of reference and guide books for debaters on various topics. The present volume on socialized medicine provides two excellent briefs for the affirmative and negative sides of the subject, a fairly extensive but well selected bibliography, definitions to guide debaters in their understanding of the topic to be discussed, and then a number of reprints of various articles by physicians, social workers and economists on this subject. These articles are divided into general discussions, affirmative discussion and negative references. It is exceedingly interesting to find the names of John A. Kingsbury and Rufus Rorem among those whose articles are put on the negative side. What a gnashing of teeth there will be when these gentlemen find where they have been located! Presumably Mr. Kingsbury was put into the negative side because he says he does not advocate the socialization of medicine but the socialization of the payment of medical costs. This would seem to be largely a distinction without a difference.

Maladies de l'intestin. III: Cancer du rectum (diagnostic, traitement chirurgical, radiumthérapie, soins médicaux), lymphosarcome, tumeurs villeuses, polype solitaire, polypose rectocolique, fibromes-myomes, angiomes. Par R. Bensaude. Avec la collaboration de J. Charrier, chirurgien des hôpitaux, et al. Paper. Price, 60 francs. Pp. 367, with 127 illustrations. Paris: Masson & Cie, 1935.

The diagnosis, surgical and radium therapy, and medical management of the significant neoplasms of the rectum and sigmoid colon are discussed in this volume. Bensaude stresses the dictum that cancer of the rectum, when uncomplicated, does not ordinarily produce cachexia. Particular emphasis is given to the importance of diagnostic proctoscopy. Digital examination is hardly mentioned. The introduction of proctoscopy is attributed to a Parisian surgeon, Desormeaux, and the German Kussmaul and others who utilized his method are accused of omitting reference to him. Differential diagnosis is treated extensively. Surgical extirpation is the method of choice for carcinoma. Radium is resorted to only in diffuse growths beyond surgical aid. Abdominal, perineal and abdominoperineal methods of approach for resection of the rectum and the terminal sigmoid are described. In 40 per cent of operated cases, no recurrence appeared after three years and longer.

A number of cases of rectocolic polyposis displayed clubbed fingers, and this sign is suggested as a diagnostic aid. Colonic polyposis is also associated occasionally with infantilism.

The print is large and readable. The paper and the many illustrations are good. The tests, written by several authors, are uniformly clear and precise. However, an index is lacking and the bibliography is inadequate. The volume is recommended to surgeon, proctologist and internist.

The Principles and Practice of Surgical Nursing. By Charles D. Lockwood, A.B., M.D., F.A.C.S., and John A. Wolfer, M.D., F.A.C.S., Associate Professor of Surgery, Northwestern University Medical School. In collaboration with Mildred E. Newton, B.S., R.N., Instructor and Supervisor of Medical Nursing, Division of Nursing, University of California. Second edition. Cloth. Price, $2.75. Pp. 371, with 172 illustrations. New York: The Macmillan Company, 1935.

The second edition of "The Principles and Practice of Surgical Nursing" has been revised and rewritten by Dr. Wolfer and his collaborator Miss Mildred E. Newton. The first edition was the work of the late Dr. Charles D. Lockwood. The monograph is essentially an outline of surgical practice and is similar in many respects to the compends which are found in the hands of senior medical students just before examination time. The book is well written and well illustrated. The subject matter is presented in a simple, direct manner. The authors deserve credit for the care which they have exercised in confining the text to important headings and in avoiding the confusion that commonly arises from attempts to incorporate too much theory or too many disputatious details. The chapter on inflammation has been supplemented and placed at the beginning of the text, and the chapter on the treatment of burns has been rewritten to accord with the present day practices.

It would seem that the most cogent criticism of the book is to be found in the choice of its title. It contains little of the essential principles and practice of surgical nursing but deals almost exclusively with the principles and practice of surgery. It should be received gratefully by instructors who are in search of a clear, concise textbook of surgery for nurses.

Reports of the Committee upon the Physiology of Vision: XIV. Characteristics of Dichromatic Vision with an Appendix on Anomalous Trichromatic Vision. By F. H. G. Pitt. Medical Research Council, Special Report Series, No. 200. Paper. Price, 1s. 3d. Pp. 58, with 20 illustrations. London: His Majesty's Stationery Office, 1935.

This report is a rather technical description of investigations of color vision made with the Wright colorimeter. This is a color mixing apparatus by which, as in the Nagel anomaloscope, pure colors are matched by mixtures of their complementary colors. In a series of normal and partially color-blind dichromatic observers, data concerning the discrimination of color luminosity and hue were collected. The report should be read in the original by those interested in color vision.

Handbook of Tuberculosis Schemes for Great Britain and Ireland. Eighth edition. Paper. Price, 5/. Pp. 169. London: National Association for the Prevention of Tuberculosis, 1935.

This directory of tuberculosis schemes in Great Britain and Ireland is of interest to American physicians mainly in that it indicates the close tie-up in the United Kingdom between preventive and therapeutic phases of the fight against tuberculosis, and also between governmental and voluntary agencies. Rough comparisons may also be made, so far as international comparisons have validity, between provisions for the tuberculous in the British Isles as compared with similar provisions in this country. In view of the numerous dispensaries and clinics available, even in counties with comparatively favorable tuberculosis death rates, there would seem to be little left for the private practitioner to do as far as tuberculosis is concerned.

The Economic Outlook in Higher Education for 1934-35. By Henry G. Badger, Assistant Statistician, Office of Education. United States Department of the Interior, Office of Education, Pamphlet No. 58. Paper. Price, 5 cents. Pp. 49. Washington, D. C.: Supt. of Doc., Government Printing Office, 1934.

This pamphlet is a review of the economic and financial outlook among institutions of higher education for 1934-1935 as seen by the financial officers of those institutions. It appears that, for the group studied, the decrease in income which has prevailed for the past two years is about at an end. The reports available from some 500 institutions (53 per cent of those to which inquiries were addressed) would seem to forecast a change of less than 1 per cent from the previous year in expected current and capital receipts, in budgeted expenditures for educational and general purposes, and in the number of staff members or in their compensation.

105
935

Medicolegal

Malpractice: Medical Books as Evidence; Expert Testimony.—The plaintiff suffered a fracture dislocation at the left ankle joint, a so-called Pott's fracture. The physician-defendant treated the injury. His patient was dissatisfied with the result and later was treated by other physicians. She sued the physician who treated her in the first instance. From a judgment in her favor, he appealed to the Supreme Court of Iowa.

The physician-defendant took exception to a ruling of the trial court that permitted the use of medical books when he was under cross-examination. He had not testified that he had examined medical books or that he relied on medical books in general or on any particular book, but on cross-examination he was asked whether he had consulted certain books and how many of those books advised a certain method of treatment. His counsel objected, but the trial court overruled the objection and required the defendant to answer. The Supreme Court held, however, that the trial court erred. It is not competent on cross-examination, said the Supreme Court, for a physician testifying as an expert to go into the contents of medical books when he has not referred to any book or named any book as an authority or one on which he relied. This rule is founded on the fact that the books themselves are not admissible. In this case such cross-examination was inadmissible for the further reason that the witness was asked to give a summary of what certain books taught on a subject, and if the books themselves were not admissible then such a summary likewise was not admissible.

It is error to admit medical books in evidence, the court pointed out, and where plaintiff's counsel in a case read a long extract from a medical book and asked a witness if he had ever read it, the error was not cured by the trial court sustaining an objection to the question; the objectionable matter had been read and could not be eliminated by a ruling sustaining an objection to it. *Etzkorn* v. *City of Oelwein*, 142 Iowa 107, 120 N. W. 636. The Supreme Court, quoting *Bixby* v. *Railway & Bridge Co.*, 105 Iowa 293, 75 N. W. 182, pointed out that data of medicine are constantly shifting with new discoveries and that conclusions which may be considered sound today are repudiated tomorrow, saying—

> A medical work may be standard this year and obsolete next. The opinion of the same author changes in the different editions, owing to new discoveries and a better understanding of symptoms. The very best works, aside from observations, are largely made up of the opinions either of the author or of others compiled. It is a well-known fact that physicians after research and investigation often differ radically.

The only circumstances under which medical books can be read in evidence is when the witness has based his opinion on them and has referred to them as authorities, and this rule cannot be evaded on cross-examination. *Hall* v. *Murdock*, 114 Mich. 233, 72 N. W. 150. This rule is based on the fact that the use of books is an attempt "to discredit the testimony of the witness by 'hearsay testimony of the written or spoken opinion of other persons, whom the jury have no means of examining as to their learning, their honesty, or their sources of special knowledge,' . . . which attempt can be justified on neither principle nor difficulty of cross-examination."

The physician-defendant, while testifying on his own behalf, was questioned by his own counsel concerning the usual and ordinary practice of physicians and surgeons in the community in which he treated the plaintiff and in similar communities, at that time, but objections on behalf of the plaintiff were sustained and the defendant was denied the opportunity of stating his opinion concerning the matter. The questions asked, said the Supreme Court, were certainly proper and the trial court erred in sustaining objections to them. It made no difference that the witness was the very physician whose conduct was under investigation. His testimony was admissible; its weight was for determination by the jury.

A medical witness for the plaintiff testified that he had had a hundred cases of Pott's fracture previous to the plaintiff's case. He was then asked: "In how many of those did you fail to get reasonably good results?" He was asked also: "Well, have you had any case where the reduction and operation—the reduction of the fracture or operation has not been reasonably satisfactory?" Objections to both of these questions, on the ground that they were immaterial and irrelevant, were overruled by the trial court, but, said the Supreme Court, the answers admitted were certainly immaterial. The cases the plaintiff's witness had had and his experiences as to results in other cases were not criteria in this case. The evidence showed that the kind of injury under consideration was quite liable, even with the best of treatment, to give unsatisfactory results. The question had no bearing on the question of negligence or lack of skill of the defendant.

The trial court erred, the Supreme Court said, in refusing to instruct the jury with respect to hypothetical questions, on the motion of the physician-defendant, that "you must determine if all of the facts assumed in the hypothetical question are established by the evidence, and if they are, you may give the answer of the witness to such questions such weight as you may deem it entitled to, but if you find that any fact assumed in any hypothetical question has not been established by the evidence, then you will give no weight or consideration to the answer of the expert to such question." The instruction requested was proper. A jury should be given some rule by which to determine the weight to be given to expert opinion testimony. If the facts stated in the question are not correct or true, it destroys the value of the answer, at least to some extent.

The judgment of the court below was reversed and the cause remanded for a new trial.—*Wilcox v. Crumpton (Iowa), 258 N. W. 704.*

Silicosis: Liability of Employer Under Common Law.—The plaintiff, an employee of the defendant-company, developed silicosis through the inhalation of dust and other impurities in the defendant's factory. He claimed compensation under the workmen's compensation act of New York, but his claim was dismissed by the industrial board. Thereupon he sued the defendant at common law. He alleged that his exposure to dust and other impurities, which had resulted in the disease from which he suffered, was due to the defendant's failure to exercise reasonable care and to perform its statutory duties in the operation of its factory. The supreme court, appellate division, fourth department, denied the defendant's motion to dismiss the complaint and, on the defendant's appeal, certified to the Court of Appeals of New York the question whether the complaint stated facts sufficient to constitute a cause of action.

The employee's suit was based on the theory that, if silicosis was not an injury compensable under the workmen's compensation act, he had a right to recover damages from his employer in an action at common law. His employer contended that, if an employee ever had had any such right under the common law, it had been abolished by the passage of the workmen's compensation act.

It is true, said the Court of Appeals, that for an "injury" within the meaning of the workmen's compensation act no right of action at common law by an employee against his employer survived the passage of the act. The act, however, defines "injury" as meaning only accidental injuries arising out of and in the course of employment and such disease or infection as may naturally result therefrom and certain occupational diseases named in the act. Silicosis, said the court, is not an accidental personal injury within the meaning of the workmen's compensation act, for the inception of the disease cannot be assigned to a determinate or single act, identifiable in space or time, or to "something catastrophic or extraordinary." Silicosis is an occupational disease, it is true, the natural and unavoidable result of conditions of employment, but it is not one of the occupational diseases named in the workmen's compensation act as compensable.

The workmen's compensation act provides that the liability of an employer prescribed by the act shall be exclusive and in place of any other liability whatever to an employee or any one else, entitled to recover damages at common law or otherwise, but this exemption relates only to liability for injuries, including occupational diseases, covered by the act, and silicosis is not so covered. There is still a field, said the court, in which an injured employee may seek damages by action at

V 1
193

common law, when there has been fault on the part of the employer. Accordingly, the Court of Appeals affirmed the order of the court below denying the defendant-employer's motion to dismiss the complaint filed by its employee. The court held that that complaint stated facts sufficient to constitute a cause of action.—*Barrencotto v. Cocker Saw Co., Inc. (N. Y.), 194 N. E. 61.*

Malpractice: Indemnity Insurance; Insurer Required to Pay Insured Physician's Traveling Expenses Incident to His Attendance at Trial.—The Medical Protective Company issued to a physician an insurance policy in which it agreed to defend him at its own expense against any claim or suit for damages arising from malpractice, error or mistake in the practice of his profession. In applying for the policy, however, the physician agreed to attend, assist and cooperate in the preparation and defense of any claim or suit against him, "without charge to the company."

A malpractice suit against the insured physician was instituted at Akron, Ohio, by one Estella Light, as administratrix, and was set for trial, May 23. Counsel for the insurer notified the insured physician, who was then residing in Longview, Texas, to be present on that date and that it would be well for his wife also to be present, and added:

> You understand, of course, that the policy we issued to you obligates you to attend the trial of any case at your own expense. We mention this at this time so there may be no misunderstanding in the matter.

The insured physician did not appear at the trial, and, at the request of counsel for the insurer, the case was continued to October 26.

Counsel for the insurer again notified the insured physician of the date set for trial and requested his attendance. The insured physician thereupon replied that his financial condition made it impossible for him and his wife to be in Akron on the date named. He asked that the case be postponed for from three to six months, when he would be in Akron and would be glad to assist and cooperate with counsel. When the case came up for trial October 26, counsel for the insurer moved for a further continuance, stating that the defendant, the insured physician, had informed him that it would be impossible for him to appear; but counsel for the insurer did not inform either the court or the plaintiff of the reason given by the defendant for his inability to be present. The court refused to grant a continuance and counsel for the insurer thereupon withdrew from the defense of the insured physician. Judgment was entered against the physician, in favor of the plaintiff, the administratrix of his deceased patient.

The administratrix of the deceased patient thereafter instituted the present proceeding against the Medical Protective Company, as the insurer which had agreed to indemnify the absent physician-defendant against loss resulting from claims or suits based on malpractice. She asked that the judgment against the absent physician be satisfied from the insurance money that the insurer had agreed to pay. The insurer defended on the ground that the insured physician had committed a breach of his contract by failing to attend the trial and to cooperate with the insurer. It claimed that because of that breach it was under no obligation to pay a judgment against him. But the trial court gave judgment against the insurer, which thereupon appealed to the court of appeals of Ohio, Summit county.

The failure of the insured physician to come from Longview, Texas, to Akron, Ohio, to attend the trial of the suit against him, said the court of appeals, and his failure to bring his wife with him at his own expense, did not constitute a breach of the condition contained in the physician's application for insurance. Construing the application and the policy as a whole, they meant, in the judgment of the court, that the physician would make no professional charge for attendance at the trial, but they did not mean that he would undertake to travel a great distance at his own expense in order to attend a trial. Under no possible construction of the application and the policy did the insured physician undertake to bring his wife to a trial, when bringing her entailed a large expense and the insurer had indicated in advance that it would not meet such expense.

When the insured physician notified his insurer that it was a financial impossibility for him to attend the trial at his own expense, it was the duty of the insurer, under the provisions of the policy, to defray that expense. Furthermore, it was the duty of counsel for the insurer, when the case was called for trial, to inform the court not only of the insured defendant's inability to be present but also of the reason for that inability as stated by him. It was the duty of the insurer, too, to inform counsel for the plaintiff in the malpractice case of the reason assigned by the insured for his absence, because plaintiff then would have had an opportunity to assist the insured physician in attending the trial. Failure of the insurer to notify either the court or counsel for the plaintiff in the malpractice case of the reason for the absence of the insured physician estopped the insurer from asserting in its own defense a breach of the condition on the part of the insured.

Judgment against the defendant insurer was affirmed.—*Medical Protective Co. v. Light (Ohio), 194 N. E. 446.*

Practice of Medicine: License Not Revocable for Unauthorized Acts of Unlicensed Assistant.—The fact that an unlicensed person, employed by a physician to assist him by rendering services that do not constitute the practice of medicine, voluntarily and without the knowledge of his employer goes beyond his proper duties and performs acts prohibited by the statute regulating such practice, does not furnish lawful ground for the revocation of the employing physician's license. A rule to the contrary, said the district court of appeal, fourth district, California, would place in jeopardy the licenses of the most conscientious ethical members of the profession, since it would impose on them liability for unauthorized, voluntary and furtive acts of their employees.—*Barrett v. Board of Osteopathic Examiners of California (Calif.), 40 P. (2d) 923.*

Medical Practice Acts: Conviction of Crime Involving Moral Turpitude as Ground for Revocation of License.—The appellee, Porter R. Rodgers, a licensed physician, pleaded guilty in the district court of the United States for the western division of the eastern district of Arkansas to a charge of possessing counterfeit money. He was sentenced to serve three years in the United States reformatory. The execution of the sentence was suspended, first for a period of two weeks, then for approximately three and one-half months and finally for a period of five years. While the execution of the sentence was thus suspended, the state medical board of Arkansas revoked Rodgers' license, under a complaint charging him with conviction of a crime involving moral turpitude. The chancery court set aside the revocation order and the board appealed to the Supreme Court of Arkansas.

"Moral turpitude," said the court, is a well defined and easily understood term. In *Fort* v. *Brinkley*, 87 Ark. 400, 112 S. W. 1084, the court said:

> "Moral turpitude" refers to an act of baseness, vileness or depravity in the private and social duties which a man owes to his fellow men or to society in general, but not to such acts as are not of themselves immoral but whose illegality lies in the fact of their being positively prohibited.

Webster defines the term as follows:

> The quality of a crime involving grave infringement of the moral sentiment of the community as distinguished from statutory mala prohibita.

In view of these definitions, the court had no hesitancy in holding that the crime to the commission of which Rodgers pleaded guilty was a crime involving moral turpitude. Possession of counterfeit money, said the court, with intent to corrupt the currency of the country and with intent to cheat and defraud any person to whom it is uttered is a base and infamous crime.

But although Rodgers had pleaded guilty to a crime involving moral turpitude and been sentenced to serve three years in the reformatory, in the opinion of the Supreme Court of Arkansas, he had not been "convicted" within the meaning of the medical practice act. No final judgment had been entered, because the sentence had been suspended, and Rodgers had not been required to surrender himself for the execution of a judgment. Something still remained to be done before he

could be said to have been "convicted." In the absence of a *final* judgment of conviction, the board was without authority to revoke his license.

The Supreme Court affirmed the judgment of the court below, setting aside the revocation order.—*State Medical Board v. Rodgers (Ark.), 79 S. W. (2d) 83.*

Malpractice: Gauze Pack Intentionally Left in Abdomen.—The physician-defendant, the chief surgeon of a hospital owned and operated by the defendant Pittsburgh Plate Glass Company, removed the plaintiff's gallbladder and appendix, Nov. 18, 1930. Three weeks after the operation the plaintiff was discharged from the hospital to her family physician. The incision did not heal; it continued to discharge pus and a "boil-like" formation developed. In February 1931, about four months after the operation, the plaintiff's condition became so serious that she returned to the hospital, where she was again under the care of the physician-defendant. At that time he alone knew that a gauze pack was in her abdomen. He treated the wound by cleansing it and applying hot applications, but he did nothing toward removing the gauze. After about ten days the plaintiff again returned to her home. On March 11 the wound opened and a gauze pack appeared at the surface. The plaintiff was immediately returned to the hospital, where the physician-defendant opened the abdomen and removed the gauze. The plaintiff thereupon sued the physician-defendant and the company operating the hospital. From a judgment of the trial court in favor of the plaintiff, for $10,000, the defendants appealed to the Supreme Court of Missouri.

The plaintiff charged the physician-defendant with negligence in leaving the gauze pack in her abdomen and thereafter failing promptly to discover it. The physician testified, however, according to the record, that in the course of the operation there was dangerous bleeding and that "to stop the hemorrhage he fastened this gauze sponge or part of it to the liver, and intentionally left it there after he sewed up the wound, except a small hole about as large as a finger left open for the purpose of drainage." He admitted that he made no record to show that he left a gauze pack in the plaintiff's abdomen and that he told no one of his having done so. He admitted, too, that it was not possible to heal a wound with a foreign body in it, and he sought to justify his failure to remove the pack by pointing out that it would have been necessary to open the wound in order to do so and that that might have caused further hemorrhage. But according to the plaintiff's testimony the physician-defendant, when he removed the sponge, remarked "Let's not let that happen again" and requested the plaintiff not to mention it, as it would harm him professionally if she did so.

If the physician-defendant's testimony is believed, said the court, that he purposely left the gauze in the wound to stop a dangerous hemorrhage and that this was necessary and proper treatment, it would refute the plaintiff's charge of negligence so far as it was based only on the defendant's duty to remove all gauze before closing the incision. The physician-defendant contended that the plaintiff had complained only of his failure to remove the gauze before closing the incision. He contended, therefore, that the instruction given by the trial court to the jury was in error so far as it permitted the jury to bring in a verdict against him if it found that he was negligent if he permitted the gauze to remain in the plaintiff's abdomen for an unreasonable length of time. With this contention, however, the Supreme Court did not agree. The plaintiff charged negligence based on the defendant's failure to discover in proper time that gauze had been left in the abdomen. Moreover, the physician-defendant himself, when he testified that it was proper to leave the gauze in the abdomen in this case, raised the issue as to the length of time it might be left in; while it might not be negligence to leave a gauze pack in the abdomen long enough to stop hemorrhage, it was a grave question of negligence to leave it in for five months.

The physician-defendant objected to the instruction given by the trial court authorizing a finding of negligence if the defendant did not exercise "*reasonable* skill and care" in failing to remove the gauze. He insisted that the degree of care required of physicians is more accurately expressed as being "such skill and care as is ordinarily possessed and exercised by members of that profession in good standing practicing in similar localities." But no one can complain, said the Supreme Court, that a given instruction imposes on him a less degree of care than that imposed by law, and the court could not say that an instruction imposing on a physician the exercise of "*reasonable* skill and care" imposed a higher degree of skill and care than that used by ordinary skilful and careful surgeons in like operations under like circumstances in the same and similar localities.

The judgment of the trial court for $10,000 against the physician-defendant and the corporation operating the hospital was, in the judgment of the Supreme Court, not unreasonable. It was therefore affirmed.—*Null v. Stewart (Mo.), 78 S. W. (2d) 75.*

Chiropractic: Injunction Not Available to Prevent Illegal Practice.—The Chiropractic League of California petitioned for an injunction to restrain two licensed chiropractors, practicing as partners, from employing certain modes of treatment. What the nature of that treatment was does not appear in the record, but the League contended that the use by the respondents of the modes of treatment complained of was not authorized by their licenses, that it constituted a menace to public health and that consequently it constituted a public nuisance that could be enjoined. From a judgment enjoining them, the two chiropractors appealed to the district court of appeal, first district, division 2, California.

Injunction, said the district court of appeal, is expressly forbidden by the Civil Code, section 3369, as amended by the Laws of 1933, page 2482, as a means of enforcing a penal law, except in a case of nuisance or unfair competition. The practice of the healing art in violation of a statute is not a nuisance per se. Moreover, unless the respondents in this case are not competent to practice the modes of treatment complained of or else such modes of treatment are in themselves injurious to patients, the use of such methods by the respondents would not constitute a nuisance. If such modes of treatment are not a nuisance, a statute forbidding their use would not make them so, since it would not affect the competence of the practitioner or the benefit or harm incident to treatment. The court of appeal could find no evidence to support the finding of the trial court that the use of the methods complained of was dangerous or injurious to health or show that the respondents lacked the skill necessary for the safe use of such methods and treatment and were therefore dangerous to the public. In the absence of a statute expressly authorizing the issue of injunctions in cases such as this, the injunction issued by the trial court was improper. The judgment of the trial court was reversed.—*People ex rel. Chiropractic League of California v. Steele (Calif.), 40 P. (2d) 959.*

Society Proceedings

COMING MEETINGS

American Academy of Tropical Medicine, St. Louis, Nov. 20-21. Dr. Earl B. McKinley, 1335 H Street N.W., Washington, D. C., Secretary.

American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 19-21. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Association of Railway Surgeons, Chicago, November 13-15. Dr. Louis J. Mitchell, 86 E. Randolph St., Chicago, Secretary.

American Society of Tropical Medicine, St. Louis, November 19-22. Dr. Alfred C. Reed, 350 Post Street, San Francisco, Secretary.

Clinical Orthopedic Society, Indianapolis and Louisville, Nov. 15-16. Dr. J. E. M. Thomson, 1307 N Street, Lincoln, Neb., Secretary.

Medical and Surgical Association of the Southwest, El Paso, Texas, Nov. 21-23. Dr. W. Warner Watkins, 15 East Monroe Street, Phoenix, Ariz., Secretary.

National Society for the Prevention of Blindness, New York, Dec. 5-7. Dr. Lewis H. Carris, 50 West 50th Street, New York, Managing Director.

Pacific Coast Society of Obstetrics and Gynecology, Los Angeles, Nov. 6-9. Dr. T. Floyd Bell, 400 29th Street, Oakland, Calif., Secretary.

Radiological Society of North America, Detroit, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Society of American Bacteriologists, New York, Dec. 26-28. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Southern Medical Association, St. Louis, November 19-22. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. E. W. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Rochester, Minn., Dec. 6-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

5: 101-136 (Sept.) 1935

Renal Calculi. E. Burns, New Orleans.—p. 101.

Ovulation, Menstruation and Finding the "Safe Period." G. F. Douglas, Birmingham.—p. 104.

Chronic Hoarseness. C. H. Cleveland, Anniston.—p. 119.

Value of Local Applications in Diseases of Respiratory Tract. C. O. Lawrence, Clanton.—p. 122.

American Journal of Cancer, New York

24: 507-750 (July) 1935

Varied Pathologic Basis for Symptomatology Produced by Tumors in Region of Pulmonary Apex and Upper Mediastinum. J. Browder and J. A. DeVeer, Brooklyn.—p. 507.

Angioblastic Meningiomas. H. Bergstrand and H. Olivecrona, Stockholm, Sweden.—p. 522.

Investigation of Value of Lead Compounds in Treatment of Malignant Tumors. Members of the Liverpool Medical Research Organization, director, M. Datnow.—p. 531.

Influence of Caloric Intake on Growth of Sarcoma 180. F. Bischoff, M. Louisa Long and L. C. Maxwell, Santa Barbara, Calif.—p. 549.

*Susceptibility to Cancer Development in Skin and in Mammary Gland in Two Lines of Inbred Mice. L. Kreyberg, Oslo, Norway.—p. 554.

Study of Walker Rat Mammary Carcinoma 256, in Vivo and in Vitro. W. R. Earle, Washington, D. C.—p. 566.

Carcinoma Mammae Occurring in Male Mouse Under Continued Treatment with Estrin. H. Burrows, London, England.—p. 613.

*Sacrococcygeal Teratoma: Report of Case of Double Tumor in a New-Born Infant. R. R. Renner and E. Goodsitt, Cleveland.—p. 617.

Significance of Abnormal Mitosis in Development of Malignancy. W. Mendelsohn, Baltimore.—p. 626.

Tumors of Nasal and Paranasal Cavities. C. F. Geschickter, Baltimore.—p. 637.

Cancer in British Malaya and Philippine Islands. F. L. Hoffman.—p. 661.

Susceptibility to Cancer of Inbred Mice.—Kreyberg describes the segregation of 1,200 albino mice from a heterozygous material, by inbreeding of two lines of mice, which as regards tar cancer and breast cancer show opposite reaction. The line with high spontaneous breast cancer incidence shows a low tar cancer incidence and vice versa. The breast cancer line has in the females shown that they are very "cancerous." According to Lacassagne's investigations, the males in this line should respond to injections of estrogenic substance with the formation of breast cancer just as readily as the females. Under natural circumstances the males do not develop breast cancer because the adequate stimulus is not produced in the male body. If the cancer tendency of this line were of a general nature, one should expect the potentially cancerous males to respond to another potent carcinogenic principle in the absence of the first. But in this case, the males of line 27 have shown no such reaction. They have shown the same low tar cancer incidence as their sisters. It does not seem permissible to designate a certain strain or line of mice as "cancerous" or "cancer resistant" without at the same time designating the special type of cancer that has been investigated. It has been established by this experiment that a certain strain or line of mice may show a very high incidence of breast cancer and at the same time show a relatively low susceptibility to development of tar cancer. It is important to examine the males and the females separately. Vice versa, a certain strain or line may show a very high susceptibility to the development of tar cancer and at the same time show a breast cancer incidence close to zero. The nonmanifestation of breast cancer may be caused by a hormone secretion insufficient to produce these tumors, an insufficiency which may be genetically determined, as indicated by the experiments of Korteweg and Lacassagne. Tar painting has been shown to be an adequate irritant in the control material, and accordingly sufficient for a fair comparison. The results of Lynch, Reinhard and Candee, Korteweg, Dobrovolskaïa-Zavadskaïa and Olch, and the author indicate that the susceptibilities to different forms of cancer are genetically different. The possible existence of a general cancer disposition, as outlined for man by Cramer, cannot be discussed on the data available from experimental research at the present time. A strain of mice, according to the author's present knowledge, may very well be nonsusceptible to tar cancer and breast cancer and at the same time be highly susceptible to another type of cancer, but not showing this susceptibility because the specific, unknown stimulus is not present. Indications regarding a general cancer disposition may, to a certain degree, be obtained if the simultaneous application of a potent tar and a potent hormone preparation in different strains or lines gives different tumor incidences for the two stimuli separately, but the total incidence is constant.

Sacrococcygeal Teratoma.—Renner and Goodsitt present a case of congenital sacrococcygeal tumor in which there were two distinct tumor masses: (1) a cystic mass behind the bone and beneath the skin, which was microscopically benign; (2) a highly malignant teratoma anterior to the sacrum and the coccyx found ten and one half months after birth, causing symptoms of obstruction. There was no anatomic connection between the two masses and apparently no evidence that the second mass arose from the first or from the same anlage as the first. The posterior tumor is believed to have arisen as the result of some defect in development of the spinal cord and vertebral canal, while the anterior tumor most probably arose from the neurenteric canal or postanal intestine.

American Journal of Medical Sciences, Philadelphia

190: 291-434 (Sept.) 1935

Diagnosis of Periarteritis Nodosa. W. S. Middleton and J. C. McCarter, Madison, Wis.—p. 291.

Periarteritis Nodosa (Necrotizing Panarteritis) in Childhood with Meningeal Involvement: Report of Case with Study of Pathologic Findings. L. Krabulik, M. Rosenthal and E. H. Loughlin, Brooklyn.—p. 308.

*Periarteritis Nodosa Without Peripheral Nodules Diagnosed Ante Mortem. A. Bernstein, Baltimore.—p. 317.

Mechanism of Decrease of Gastric Secretion with Advancing Years. A. L. Bloomfield, San Francisco.—p. 325.

Carcinoma of Breast in One of Homologous Twin Sisters. I. I. Kaplan, New York.—p. 331.

Choked Disk in Syphilis of Nervous System. B. J. Alpers and J. C. Yaskin, Philadelphia.—p. 333.

Detection of Tubercle Bacilli in Blood Stream by Loewenstein Technic and Analysis of Loewenstein's Investigations. M. Siegel, New York.—p. 345.

*Bronchogenic Carcinoma: Analysis of Fifty-Four Cases with Roentgenologic Classification. M. G. Wasch and B. S. Epstein, Brooklyn.—p. 362.

Estimation of Basal Metabolic Rate from Pulse Rate and Pulse Pressure. B. I. Comroe, Philadelphia.—p. 371.

*Angina Pectoris and Heart Block, as Symptoms of Calcareous Aortic Stenosis. E. P. Boas, New York.—p. 376.

Comparative Study of Geographic Distribution of Rheumatic Fever, Scarlet Fever and Acute Glomerulonephritis in North America. D. Seegal, Emily Beatrice Carrier Seegal and Elizabeth L. Jost, New York.—p. 383.

Isolated Tricuspid Stenosis of Probable Rheumatic Origin: Report of Case with Unusual Clinical and Pathologic Findings. A. B. Clements, New York.—p. 389.

Variability of Murmurs in Mitral Stenosis. N. Flaxman, Chicago.—p. 396.

Value of Colloidal Sulphur in Treatment of Chronic Arthritis. W. B. Rawls, B. J. Gruskin and A. A. Ressa, New York.—p. 400.

Bacterial Flora Associated with Foreign Bodies in Trachea and Bronchi. C. J. Bucher, Philadelphia.—p. 409.

Differential Blood Picture of Group of Rural Inhabitants of Alabama. H. A. Poindexter, Washington, D. C.—p. 416.

Periarteritis Nodosa Without Peripheral Nodules.—Bernstein cites a case of periarteritis nodosa without peripheral nodules, in which the diagnosis was suspected and verified by biopsy of a muscle before death. The abnormalities encountered were polyneuritis, disturbances of vision and hearing, hypertension with evidence from examination of the urine of renal disease, fever, tachycardia, edema, anemia with leukocytosis and eosinophilia, a positive Wassermann reaction and the systemic manifestations of a chronic wasting illness. Anasarca, at first thought referable to reduced total blood proteins, persisted after these had been restored to a normal level. Syphilis was assumed to have no etiologic relationship to the patient's main illness.

105
935

The early course of the disease transpired during a period of persistent antisyphilitic therapy. There were wide oscillations of the blood pressure, suggesting the diagnosis of periarteritis nodosa. The rapid progression of hypertension with an initial elevation of pressure followed by a temporary decline and once again steady increase first called to mind the possibility of periarteritis nodosa explaining the symptoms. There was occlusion of a central retinal artery, while the smaller retinal vessels showed only minimal constriction in caliber. Deafness in periarteritis nodosa is uncommon. The otitic involvement was of the nerve type. The auditory nerves may have been attacked in periarteritis nodosa in the same manner as the peripheral nerves.

Bronchogenic Carcinoma.—Wasch and Epstein report fifty-four proved cases of primary bronchogenic carcinoma, with an analysis of the symptoms. Of fifty-one cases studied roentgenographically, a positive diagnosis was made in twenty-three, and in twelve the diagnosis was suggested. Pleural effusion obscured the changes in four. The diagnosis was not made in the remaining twelve cases. Bronchoscopy was done in thirty-one cases; in twenty-six of these the diagnosis was established. Three cases, in which the diagnosis was not made, were unusual in that the lesion occurred in a subdivision of the main bronchus and was, therefore, inaccessible to the bronchoscope; no biopsy was done in two. Bronchoscopy is the most valuable single diagnostic aid. However, since roentgenograms are readily obtained, a roentgen study should be the initial diagnostic procedure. Though the roentgenogram may be negative, bronchoscopy should be urged in all cases in which the clinical picture is suggestive. It is these very early lesions, not demonstrable roentgenologically, that may be most benefited by treatment. The outlook for a patient with bronchogenic carcinoma is discouraging. Until recently, the prognosis was invariably fatal. Within the past few years more encouraging reports have appeared in the literature. The important problem is to diagnose the case sufficiently early to allow surgical intervention or efficient radiotherapy. The disease is now passing into that stage of its history in which the diagnosis is no longer sealed with a forlorn hope, but rather by its early detection opens the possibility of radical or palliative therapy.

Angina Pectoris and Heart Block.—Boas states that of nineteen private patients with aortic stenosis four had classic angina pectoris, illustrating the gradual development of the anginal syndrome with the progress of the aortic narrowing. In the first case the evolution of the symptoms paralleling the advancing valvular lesion is particularly striking. In this case, the necropsy revealed essentially normal coronary arteries. On the basis of the prevalent theory that the anginal syndrome is caused by anoxemia or ischemia of the cardiac muscle, the mechanism in these cases is readily understandable. The blocking of the blood flow to the myocardium takes place at the aortic orifice instead of in the coronary arteries themselves. A casual inspection of some of these valves deformed by calcified nodules reveals how extreme this obstruction can be. Moreover, it impairs the blood supply in the territories of both right and left coronary arteries simultaneously, in contrast to the more localized area of impeded blood flow usually occurring in coronary arteriosclerosis. In the fourth case the anginal syndrome was always more accentuated when, as a result of the appearance of heart block, the heart rate dropped to 40. Because of the narrowed aortic orifice, the heart could not compensate for this slowed rate by increasing the stroke volume, so that relative ischemia of the cardiac muscle occurred. When the aortic orifice is greatly narrowed, rapidly developing heart failure by still further retarding the blood flow through the minute opening may induce an acute myocardial ischemia analogous to that following coronary artery thrombosis and giving rise to identical symptoms. This is illustrated by the sudden death of patients. Angina pectoris has often been noted in patients with aortic insufficiency, and, since all the author's patients had aortic insufficiency as well as stenosis, it might be asserted that it was the incompetence, rather than the narrowing of the valve that was responsible for the cardiac pain. The clinical manifestations of a conduction defect in patients with aortic stenosis, while not as frequent as the anginal syndrome, is not uncommon.

American Journal of Physiology, Baltimore

112: 573-728 (Aug.) 1935

Visceropannicular Reflex. D. M. Ashkenaz and E. A. Spiegel, Philadelphia.—p. 573.

Substance in Human Seminal Fluid Affecting Uterine Muscle. Jessie Reed Cockrill, E. G. Miller Jr. and R. Kurzrok, New York.—p. 577.

Comparative Study of Sodium, Chloride and Blood Pressure Changes Induced by Adrenal Insufficiency, Trauma and Intraperitoneal Administration of Glucose. W. M. Parkins, A. R. Taylor and W. W. Swingle, Princeton, N. J.—p. 581.

Comparison of Influence of Fasting on Tolerance to Glucose and Galactose. E. M. MacKay, H. C. Bergman and R. H. Barnes, La Jolla, Calif.—p. 591.

Effect of Antidromic Impulse on Response of Motoneuron. R. Lorente de Nó, St. Louis.—p. 595.

Determinations of Refractory Periods in Turtle Heart. A. S. Gilson Jr., St. Louis.—p. 610.

Influence of Hyperpnea and of Variations of Oxygen Tension and Carbon Dioxide Tension in Inspired Air on After-Images. E. Gellhorn and I. G. Spiesman, Chicago.—p. 620.

Phasic Changes in Coronary Flow Established by Differential Pressure Curves. H. D. Green, D. D. Gregg and C. J. Wiggers, Cleveland.—p. 627.

Peripheral Motor Sympathetic Innervation To and Within the Uterus. S. R. M. Reynolds and S. Kaminester, Brooklyn.—p. 640.

Influence of Progressive Toxemic Liver Damage on Dextrose Tolerance Curve. S. Soskin and I. A. Mirsky, Chicago.—p. 649.

Lymph Formation During Glandular Activity. Octa C. Leigh, Boston.—p. 657.

Influence of Hyperpnea and of Variations in the Oxygen Tension and Carbon Dioxide Tension in Inspired Air on Nystagmus. E. Gellhorn and I. Spiesman, Chicago.—p. 662.

Influence of Sodium Taurocholate, Hepatic Bile and Gallbladder Bile on Absorption of Oleic Acid from Small Intestine. Cecilia Riegel, K. O. Elsom and I. S. Ravdin, Philadelphia.—p. 669.

Further Studies of Effects of Estrogenic and Galactopoietic Hormones on Mammary Giand of Rabbit. W. U. Gardner, New Haven, Conn., E. T. Gomez and C. W. Turner, Columbia, Mo.—p. 673.

Study of Comparative Physiology of Glossopharyngeal Nerve: Respiratory Reflex in Rabbit, Cat and Dog. H. A. Teitelbaum and F. A. Ries, Baltimore.—p. 684.

Cooperative Action of Sympathetic Nerve Impulses, Adrenine and Sympathin on Nictitating Membrane of Cat. A. C. Liu, Boston.—p. 690.

Physical Activity and Blood of Albino Rats. E. C. Schneider and C. B. Crampton, Middletown, Conn.—p. 695.

Carbon Dioxide Content and Combining Power and Hydrogen Ion Concentration of Cervical Lymph. J. W. Heim and Octa C. Leigh, Boston.—p. 699.

Effect of Posture and Prolonged Rest on Cardiac Output and Related Functions. S. A. Gladstone, New York.—p. 705.

Effect of Lactogenic Hormone Preparations on Blood Sugar Level of Rabbits and Monkeys. W. O. Nelson, C. W. Turner and M. D. Overholser, Columbia, Mo.—p. 714.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

34: 145-288 (Aug.) 1935

Examination of Mucosal Relief as Diagnostic Aid in Diseases of Gastro-Intestinal Tract. G. W. Holmes and R. Schatzki, Boston.—p. 145.

*Experiment on Effect of Exercise on Heart in Athletes. R. Paterson and Edith Paterson, Toronto.—p. 158.

The Esophagus in Disease of Heart and Aorta: Case Report with Roentgen and Postmortem Findings. J. B. Schwedel and E. B. Gutman, New York.—p. 164.

Acute Influenza Pneumonitis. A. Bowen, Honolulu, T. H.—p. 168.

Initial Lobar Tuberculosis. E. H. Rubin, New York.—p. 175.

Observations on Roentgen Pathology of Ethmoid Labyrinth and Sphenoid Sinuses. D. L. Palmer, Portland, Ore.—p. 181.

Roentgenologic Follow Up of One Hundred and Twenty-Five Cases of Peptic Ulcer, with Clinical and Laboratory Findings: Roentgen Demonstration of Cases Healed by Medical Treatment, and Those Which Require Surgical Treatment. A. J. Delario, Paterson, N. J.—p. 190.

*Tuberculous Cysts of Knee Joint. A. E. Elliott, San Diego, Calif.—p. 209.

Roentgen Therapy in Hyperplastic Blood Dyscrasia: New Technic for Myeloid and Lymphatic Leukemia, Polycythemia Rubra Vera and Hodgkin's Disease. H. Langer, Pittsburgh.—p. 214.

Rôle of Roentgen-Ray Wavelength in Skin Tolerance. P. C. Hodges, A. Brunschwig and S. P. Perry, Chicago.—p. 234.

Dangers of Roentgenoscopy and Methods of Protection Against Them: VI. Some Studies of "Doses" Received by Body of the Examiner. E. I. L. Cilley, E. T. Leddy and B. R. Kirklin, Rochester, Minn.—p. 241.

Effect of Exercise on Heart in Athletes.—The Patersons state that a walking marathon race of 31 miles provided an opportunity for making various observations on the response of the heart to exercise. From planimeter measurements of roentgenograms, it was found that the size of the heart decreased after severe exercise in all the subjects observed. This diminution was seen both in the anteroposterior and in the lateral views of the heart and averaged 17.5 per cent in

the former and 12.5 per cent in the latter. The maximal diminution observed was 30 per cent seen in two cases in the anteroposterior view. This decrease bore no apparent relationship to the increased heart rate, and it persisted after the heart rate had returned to normal. The diminution of the size of the heart, therefore, is not comparable with that which has been shown to occur when the heart is accelerated without physical exertion. The decrease in heart size could not be correlated with the athletic ability of the individuals. No significant changes occurred in the electrocardiograms.

Tuberculous Cysts of Knee Joint.—Elliott points out that the diagnosis of tuberculosis of the knee joint is frequently a difficult problem. Even with the history, clinical observations, roentgenograms, tuberculin reaction and guinea-pig tests, a preoperative diagnosis is often impossible. Tuberculosis of the knee joint may be present with entirely negative roentgen signs. On the other hand, all the usual changes characteristic of typical joint tuberculosis may occur in nontuberculous lesions. The diffuse demineralization of the adjacent bone may be present in any inflammatory lesion that involves the synovial membrane and may be as great as that seen in advanced tuberculosis. The marginal erosion described by Fraser, which represents the early invasion of bone at the synovial reflexion, has also been shown by Allison and Ghormley to occur in cases of proliferative arthritis. The subchondral infiltration described by Phemister frequently does not alter the visualized joint margin until late in the disease and even then the roentgen observations may not differ from those of a chronic osteoarthritis of other origin. Invasion and bone destruction of the epiphysis may present changes not distinguishable from syphilis or other infections of the joint. The smooth-walled cysts simulating osteitis fibrosa cystica must also be considered a definite manifestation of joint tuberculosis. The two cases presented show that such tuberculous cysts occur in the knee joint as well as in the hands and feet, as described by Jüngling, and in the shoulder and elbow, as described by Van Alstyne and Gowen. However, these cysts are not pathognomonic of tuberculosis and there may be no definite roentgen changes to differentiate them from true osteitis fibrosa cystica. It should be remembered that cysts occurring in the knee joint may be tuberculous in origin, and the discovery of such cysts in a chronic gonitis should indicate an early biopsy to establish the diagnosis.

Anatomical Record, Philadelphia

63: 1-100 (Aug. 25) 1935

*Morphologic Reaction of Anterior Pituitaries of Mature Female Rats to Prolonged Injections of Pregnancy Urine Extracts. J. M. Wolfe, Nashville, Tenn.—p. 3.
Mechanism of Laryngeal Pitch. L. H. Strong, Ann Arbor, Mich.—p. 13.
Degeneration of Supra-Opticohypophyseal System in Diabetes Insipidus. C. Fisher, W. R. Ingram, W. K. Hare and S. W. Ranson, Chicago.—p. 29.
Visual Cells of Amphibian Retina in Absence of Epithelial Pigment Layer. Myra L. Johnson, New York.—p. 53.
Quantitative Cytologic Study of Bone Marrow of Adult Albino Rat. J. Stasney and G. M. Higgins, Rochester, Minn.—p. 77.
Occurrence of Cytoplasmic Cell Inclusions in Cervix of Uterus of Rabbit. L. Loeb and Margaret G. Smith, St. Louis.—p. 91.
Sequence of Epiphyseal Union in Skeleton of Mouse, with Especial Reference to Phenomenon of "Lapsed" Union. A. B. Dawson, Boston.—p. 93.

Reaction of Anterior Pituitaries of Rats to Injections of Pregnancy Urine Extracts.—Wolfe gave twenty mature female rats daily injections of 25 units of pregnancy urine extract for 140 days. At necropsy it was revealed that the weight increases in the pituitaries and the ovaries, which such injections induce in short-time experiments, had failed to persist in most rats. The weights of these glands had decreased and in some instances had approached the normal or were below normal. The pituitaries which had declined to a normal or an almost normal weight presented a normal relative level of eosinophils, which were well packed with granules. In pituitaries in which the weights were still high, these cells were reduced in relative percentage and exhibited loss of granules. There were intermediate variants between these two extremes. The weight and the morphologic changes in the anterior pituitaries were correlated with the weight and the morphologic condition of the ovaries. Loss of granules and a reduction in their relative percentage was associated with the presence of large corpora lutea in the ovaries. The basophils of all glands were depleted of their granules and their relative percentage remained below the normal level. Injections of pregnancy urine extracts resulted in many mitoses in the chromophobes and a lesser number in the eosinophils. The result was an increase in the total number of cells in the glands. The part played by this factor in increasing the weight of the pituitary is discussed.

Annals of Surgery, Philadelphia

102: 321-480 (Sept.) 1935

Nonoperative Treatment of Peripheral Vascular Diseases. M. R. Reid and L. G. Herrmann, Cincinnati.—p. 321.
Arterial Spasm in Extremities. W. J. M. Scott, Rochester, N. Y.—p. 331.
Indications for Amputation in Progressive Arterial Obliteration of Lower Extremities. L. S. McKittrick, Boston.—p. 342.
Relationship of Parathyroid Gland to Calcium Metabolism. D. P. Willard, Philadelphia.—p. 351.
The Ober Operation for Sciatica. H. W. Cave, New York.—p. 357.
*Obstructive Jaundice. D. P. MacGuire, New York.—p. 360.
Subcutaneous Perforation of Jejunum. V. S. Counseller and C. J. McCormack, Rochester, Minn.—p. 365.
Indications for Gastrostomy and Jejunostomy. W. H. Barber, New York.—p. 375.
Torsion and Volvulus of Stomach with Diaphragmatic Hernia. S. D. Weeder, Philadelphia.—p. 382.
Invisceration. R. Goldsmith, Philadelphia.—p. 387.
Pneumococcic Peritonitis: Analysis of Seven Cases. C. F. Horine, Baltimore.—p. 391.
Penetrating Wounds of Abdomen. F. J. McGowan, New York.—p. 395.
Regional (Terminal) Ileitis. H. L. Bockus and W. E. Lee, Philadelphia—p. 412.
*Radium Burns of Rectum. V. C. David, Chicago.—p. 422.
Thermal Burns. J. Gunn and J. A. Hillsman, Winnipeg, Manit.—p. 429.
Bleeding Volume in Severe Burns. H. N. Harkins, Chicago.—p. 444.
Pilonidal Cysts and Sinuses. L. Breidenbach and H. L. Wilson, New York.—p. 455.

Obstructive Jaundice.—MacGuire states that to improve the clotting time in obstructive jaundice transfusions of whole blood and dextrose solutions should be administered. A 10 per cent solution of calcium chloride and ampules of calcium agglutinate are also useful since they increase the blood calcium. Chloride deficiency is improved by the introduction of physiologic solutions of sodium chloride and diluted hydrochloric acid solutions by mouth. One drachm (4 cc.) should be given daily in divided doses, gradually increasing the amount. Insulin should be administered in cases showing increased blood sugar. The diet consists of various fruit juices and cereals, unless contradicted by some special complication. These patients suffer a fall of body temperature during the operative procedures. This has to be counteracted by using hot laparotomy pads, short exposures and a warm operating room. The loss of fluids, caused by the drainage, must be counterbalanced by the introduction of dextrose and saline fluid. After the first seventy-two hours the drainage tube may be clamped for a certain time each hour in cases in which it is possible to do so. The time factor is one of the most serious considerations because, at best, the patients are poor surgical risks. It is essential to make sure that the drainage tubes, buttons for anastomosis, and syringes are in perfect condition before operating.

Radium Burns of Rectum.—David points out that two gross types of reaction to radium irradiation are seen in the rectum: hyperemia and actual necrosis or ulcer formation. Hyperemia, which is practically always observed after any considerable irradiation of the rectum, usually develops in from ten days to two weeks and increases in intensity up to from three to six weeks, at which time it slowly recedes. Ulceration or third degree burns may be diffuse or local, in which event a persistent indolent ulcer replaces the neoplastic ulcer that was irradiated. Owing to connective tissue contraction, radiating lines of constriction are seen in the mucous membrane surrounding the ulcer, and the mucosa appears smooth and atrophic, without its usual delicate folds. In four of the author's patients the ulcer was over the prostate at the former site of the carcinoma and was firmly adherent to the prostate and immobile. Histologically, the picture was typical of ulcers following irradiation in any part of the body. For purposes of discussion he selected eight cases presenting marked radium burns. In six of them the burns resulted from treatment of carcinoma of the

rectum and in two from treatment of hypertrophy of the prostate and leukoplakia of the rectum, respectively, by the local application of radium. Of the six radium burns following treatment of carcinoma there was suggestive gross evidence of carcinoma in two. In the other four patients the lesion was a flat ulcer with marked scar tissue contraction about it and had no characteristics of a carcinomatous ulcer. When these six radium burn ulcers were examined histologically, three showed definite evidence of carcinoma in the depth of the ulcer under the necrotic exudate, and in two degenerated cells were found in the base of the ulcer, which were histologically suggestive of carcinoma. In the sixth patient, who had a destructive adenoma removed and radium needles planted into the rectum at its base, the resulting burn was not in any way typical of carcinoma and repeated biopsies over a period of five years showed no tumor cells. This patient died of pneumonia and no postmortem examination was obtained. In the five patients having radical removal of the rectum a careful dissection of the specimens for involved lymph nodes showed positive changes in one instance. Pathologically, in these six patients, three showed definite evidence of carcinoma, two probable evidence and one no evidence of tumor cells in the burned area. Clinically, only the one patient with the small burn following irradiation of the destructive adenoma was only moderately uncomfortable. The remaining seven patients were practically incapacitated. The radical removal of the rectum was made very difficult because of loss of the normal cleavage planes by reason of extensive fibrosis and dense adherence of the radium burn to the prostate in three patients, in whom it was necessary to remove the posterior one fifth to one third of the prostate by knife excision to remove the necrotic area of the burn entirely. In the patient with extensive burn following treatment of prostatic hypertrophy, the rectum was split open posteriorly after removal of the coccyx and the burn was thoroughly excised and the adjacent mucosa mobilized to cover the defect as much as possible. All the patients recovered from the operation. One has since died of carcinoma, having local as well as general recurrences. The remaining six are well and free from recurrence, from one to two and one-half years following the operation. It seems evident that, when carcinoma of the rectum is treated by radium and a burn results, carcinoma may still be present in the base of the burn or in the lymphatic nodes and radical removal of the rectum is indicated. If a radium burn in the rectum results from treatment of other lesions, local removal of the burn is the treatment of choice, as applies in radiation burns elsewhere in the body.

Archives of Otolaryngology, Chicago

22: 277-402 (Sept.) 1935

*Clinical Cases in Which Vertigo Is a Cardinal Symptom. J. B. McMurray, Washington, Pa.—p. 277.
Facial Paralysis. O. P. Bourbon, Los Angeles.—p. 285.
Faulty Surgical Instruments as Cause of Foreign Body. C. Jackson and C. L. Jackson, Philadelphia.—p. 293.
Correction of Saddle Nose. G. D. Wolf, New York.—p. 304.
Absorption from Middle Ear. E. L. Ross and R. W. Rawson, Chicago.—p. 312.
Tracheotomy for Relief of Laryngeal Obstruction in Children. H. E. Kully, Omaha.—p. 317.

Vertigo as a Cardinal Symptom.—McMurray points out that vertigo is not an otologic problem, except when it occurs as a complication in cases of acute or chronic suppurative otitis media. The aurist can be of aid in determining the cause of the vertigo, but not more than the ophthalmologist. In many cases of intermittent vertigo of a severe type the hearing and labyrinths are normal so far as can be determined by the present methods of examination. It is possible that the lesion is located somewhere along the labyrinthine pathway, on the way either to or from the cerebral cortex. Whether the exciting cause is a disturbance of water metabolism, as suggested by Kopetzky and Dederding, the sensitivity of the nucleus, vestibular nerve or labyrinth itself to sodium, as suggested by Furstenberg, Lashmet and Lathrop, or to toxins from a distant focus or protein sensitization cannot at present be determined. All patients with true vertigo should be thoroughly examined and all possible foci of infection eliminated, as there is sufficient evidence to warrant the conclusion that infection may be the etiologic factor. In cases of Ménière's symptom complex, if the side of the offending lesion cannot be definitely determined, section of the vestibular nerve does not promise brilliant results.

Archives of Pathology, Chicago

20: 337-506 (Sept.) 1935

Effect of Iodine on Cholesterol-Induced Atherosclerosis. Dorothy R. Meeker, H. D. Kesten and J. W. Jobling, New York.—p. 337.
*Experiments Relative to Vaccination Against Tuberculosis with Calmette-Guérin Bacillus (BCG). B. J. Clawson, Minneapolis.—p. 343.
Acute Ulcerative Esophagitis: Pathologic and Clinical Study of Eighty-Two Cases Observed at Necropsy. E. C. Bartels, Boston.—p. 369.
Lymphomatosis in Relation to Fowl Paralysis. J. Furth, with assistance of C. Breedis, New York.—p. 379.

Vaccination Against Tuberculosis with Calmette-Guérin Bacillus.—Clawson discusses experiments concerned with immune reactions to determine the safest method of using the Calmette-Guérin bacillus in developing resistance to bovine and human tuberculosis. The BCG vaccine was administered as living organisms subcutaneously and intravenously and as heat-killed organisms in the same way. The vaccine so administered was studied in respect to safety and to resistance. No mechanical injuries were observed from vaccinating many animals by each of the four methods. No toxic results, either immediate or delayed, were noted in the normal animals after vaccination. With large doses given intravenously to animals already allergic, extreme collapse and death took place within twenty-four hours, but ordinary doses were not accompanied by toxic effects in the allergic animals. Subcutaneous injections of the vaccine into allergic animals had no ill effects. In allergic animals vaccinated with relatively small doses intravenously, small, nonprogressive tubercles frequently developed in the lungs, liver and spleen. It would seem that vaccination of persons should be limited to those not having a positive reaction to the cutaneous tuberculin test. The frequency and degree of allergy were greater after vaccination by methods in which the living organisms were injected, but even by these methods allergy did not develop in all animals. A relatively small amount of allergy was produced in the animals given subcutaneous injections of heat-killed organisms. No animals vaccinated intravenously with heat-killed organisms became allergic. Severe allergy following vaccination disappeared in about three months. This disappearance of allergy was probably more rapid than in persons in whom allergy is so frequently due to arrested active lesions. But it seems probable that any allergy, especially of the smaller degrees, which develops in the course of vaccination with BCG should not be looked on as a serious handicap. Allergy in association with vaccination and probably with the development of a tubercle has been found to appear in from one to three weeks. If allergy had not appeared in three weeks after the last injection of the vaccine, it was found that it would not occur. Allergy definitely tended to disappear before resistance. The experiments seemed to show that there is no proportionate or necessary relation between allergy and the immune bodies, agglutinins, complement-fixing antibodies, opsonins and lysins. In this respect, allergy in tuberculosis seems to differ from the Arthus phenomenon. A high antibody content could be developed in animals without allergy; on the other hand, a high degree of allergy could occur without measurable antibodies. Allergic animals were desensitized so that they failed to give a positive Mantoux reaction, and in the process of desensitization the number of antibodies was greatly increased. Allergy never occurred in animals in which lesions could not be found. Only living organisms injected intravenously produced small, nonprogressive tubercles in the lungs, liver and spleen. As far as safety in the process of vaccination with BCG is concerned all methods are safe except the injection of the living organisms intravenously. Evidence of resistance due to vaccination against the virulent bovine strain of the tubercle bacillus in rabbits and against the virulent human strain in guinea-pigs was shown: (1) by a correlated increase in the titers of agglutinins, complement-fixing antibodies, opsonins and lysins, and (2) by actually preventing or greatly retarding the development of tuberculosis in rabbits and in guinea-pigs after inoculations with virulent strains of tubercle bacilli.

Illinois Medical Journal, Chicago

68: 97-196 (Aug.) 1935

Rôle of Surgery in Diseases of Thyroid. M. Nordland, Minneapolis.—p. 117.
Reconstruction of the Hip. F. G. Dyas, Chicago.—p. 124.
Intermittent Gastric Obstruction Following Cholecystectomy. C. U. Collins, Peoria.—p. 127.
Primary Urethral Calculi: Report of Case with Resection of Urethra. N. J. Heckel and R. E. Johannesen, Chicago.—p. 130.
Herpes Zoster. F. G. Norbury, Jacksonville.—p. 134.
Removal of Superfluous Hair by Multiple Electrolysis. W. A. Rosenberg, Chicago.—p. 138.
Observations on the Public Health Outlook. F. J. Jirka, Springfield.—p. 140.
Roentgenology of the Alimentary Tract. M. J. Hubeny, Chicago.—p. 143.
Backache in Women. S. J. Lang, Evanston.—p. 147.
Muscular Asthenopia. R. H. Woods, La Salle.—p. 150.
Eye and Ear Reflexes Caused by Dental Pathology. J. Shanks, Chicago.—p. 152.
Symptoms and Diagnosis of Coronary Occlusion. J. G. Carr, Evanston.—p. 155.
Causes of Acute Dilatation of Stomach. D. Klemptner, Chicago.—p. 159.
Service Program of American Legion. P. G. Armstrong, Chicago.—p. 163.
Cardiac Review of 1934. N. Flaxman, Chicago.—p. 165.
Why Mosquitoes Carry Typhoid. J. H. Beard and J. R. Cain, Urbana.—p. 177.
Stumbling Blocks in Infant Care. S. J. Wilkinson, Decatur.—p. 182.
Gastric Secretion in Biliary Tract Disease. F. Steigmann, Chicago.—p. 186.
Veterans' Medical Legislation as It Affects the Medical Profession. E. H. Cary, Dallas, Texas.—p. 189.

Journal of Clinical Investigation, New York

14: 505-724 (Sept.) 1935

*Streptococcic Agglutinins and Antistreptolysins in Rheumatoid (Atrophic) Arthritis. J. E. Blair and Frances A. Hallman, New York.—p. 505.
Sulphur Metabolism in Cystinuria. J. C. Andrews and A. Randall, Philadelphia.—p. 517.
Observations on Sodium Chloride Restriction and Urea Clearance in Renal Insufficiency. E. M. Landis, K. A. Elsom, P. A. Bott and E. Shiels, Philadelphia.—p. 525.
Vital Capacity of Lungs: Changes Occurring in Health and Disease. J. H. Arnett, Philadelphia.—p. 543.
Studies on Mechanism of Increased Oxygen Consumption in Patients with Cardiac Disease. H. Resnik Jr. and B. Friedman, Nashville, Tenn.—p. 551.
Studies of Kidney Function in Children: I. Urea Clearance Values: (1) No Evidence of Kidney Disease (2) After Acute Hematuric Nephritis Following an Acute Infection (3) in Acute Stage of Hematuric Nephritis. G. E. Cullen, W. E. Nelson and F. E. Holmes, Cincinnati.—p. 563.
Kidney Function During Normal Pregnancy: I. Increased Urea Clearance of Normal Pregnancy. Margaret Nice, Cleveland.—p. 575.
Serum Lipoids in Diabetes. Evelyn B. Man and J. P. Peters, New Haven, Conn.—p. 579.
*Specific Dynamic Action of Carbohydrate and of Protein in Human Hypothyroidism After Total Ablation of Normal Thyroid Gland. M. Landowne, Boston.—p. 595.
Influence of Varying As-Vs Intervals on Split First Heart Sounds: Its Bearing on Cause of Split Sounds and Mechanism of First Sound. C. C. Wolferth and A. Margolies, Philadelphia.—p. 605.
Comparative Calorigenic Action of Normal and Pathologic Thyroid Glands Administered in Equi-Thyroxine Doses. W. W. Palmer and J. P. Leland, New York.—p. 619.
Clinical Observations on Events Preceding Appearance of Rheumatic Fever. E. F. Bland and T. D. Jones, Boston.—p. 633.
Further Observations on Leukocytic Response Induced by Intramuscular Injection of Liver Extract. J. H. Powers, with assistance of Cynthia Van Doren, Cooperstown, N. Y.—p. 649.
Relationship Between Insensible Water Loss and Heat Production in Patients with Hypothyroidism Compared with Normal Subjects. D. R. Gilligan and G. Edsall, Boston.—p. 659.
Response of Guinea-Pig's Reticulocytes to Substances Effective in Pernicious Anemia: Biologic Assay of Therapeutic Potency of Liver Extracts. B. M. Jacobson, Boston.—p. 665.
Assay on Guinea-Pigs of Hematopoietic Activity of Human Livers, Normal and Pernicious Anemia. B. M. Jacobson, Boston.—p. 679.
Heterophile Antibodies in Pneumonia. M. Finland, J. M. Ruegsegger and L. D. Felton, Boston.—p. 683.
Metabolic Effects of Human Thyroglobulin and Its Proteolytic Cleavage Products. W. T. Salter and J. Lerman, Boston.—p. 691.

Streptococcus Agglutinins and Antistreptolysins in Rheumatoid Arthritis.—Blair and Hallman demonstrated agglutinins for hemolytic streptococci in high titer in the serums of a majority of patients (85 per cent) with rheumatoid arthritis. Agglutination of hemolytic streptococci in high titer by a large percentage of serums was not obtained in other chronic arthritides. No correlation was found between the agglutination titer and the age of the patient, duration of the disease, number of joints involved or sedimentation rate in cases of rheumatoid arthritis. Antistreptolysin was present in titers above the normal range in the serums of patients with proved infections by hemolytic streptococci and with acute rheumatic fever. There was a tendency for the antistreptolysin titer to return to within the normal range some time after convalescence. Antistreptolysin in titers definitely above normal were found in about one third of the serums from patients with rheumatoid arthritis. With one exception, these high titers accompanied high agglutination titers. The presence of agglutinins for hemolytic streptococci in serums from patients with rheumatoid arthritis is suggestive of an association of these organisms with this disease. Additional suggestive evidence may be offered by the presence of antistreptolysin, when it is found in titers above normal.

Action of Carbohydrate and Protein in Hypothyroidism Following Ablation of Thyroid.—Landowne studied the specific dynamic action after the ingestion of from 70 to 95 Gm. of carbohydrate in eleven instances on nine patients, at times varying from two to twenty-one months after total thyroidectomy. The average basal metabolic rate at the time of the eleven tests was minus 30.5 per cent. The oxygen consumption increased in each instance after the carbohydrate meal, the increase lasting from two to four hours. The average of the maximal increases over the basal oxygen requirements was 16 cc. of oxygen per minute, or 10.1 per cent, and the average total increase was 1,400 cc. per minute, or 4.4 per cent, for the average duration of the experiments (three and a third hours). These results are interpreted as demonstrating the presence of specific dynamic action of hexose in human hypothyroidism following total ablation of the normal thyroid. Although this specific dynamic action appears in percentage to be approximately equal to, it is, on an absolute basis, somewhat less than the average of figures for normals taken from the literature. The specific dynamic action after the ingestion of from 54 to 102 Gm. of protein was studied in five instances on four patients, at times varying from four to twelve months after total thyroidectomy. The average basal metabolic rate at the time of the five tests was minus 28.6 per cent. The oxygen consumption increased in each instance after the protein meal, the increase lasting at least from six to seven hours. The average maximal increase was 29 cc. per minute (20 per cent of the basal oxygen requirement) and the total increase over the observed period (from six to seven hours) was 10,570 cc. (16.6 per cent of the basal oxygen requirement), or 14,000 cc. per hundred grams of protein. These results are interpreted as indicating the presence of a specific dynamic action of protein in the totally thyroidectomized hypothyroid human subject. The extent of the specific dynamic action is within the range of normal as compared with values found in the literature.

Journal of Experimental Medicine, New York

62: 289-456 (Sept. 1) 1935

Antigenic Relationship Between Bacillus Proteus X-19 and Rickettsiae: III. Study of Antigenic Composition of Extracts of Bacillus Proteus X-19. M. Ruiz Castaneda, Boston.—p. 289.
Modified Method of Obtaining Large Amounts of Rickettsia Prowazeki by Roentgen Irradiation of Rats. A. Macchiavello and R. Dresser, Boston.—p. 297.
Rabbit Pox: IV. Susceptibility as Function of Constitutional Factors. H. S. N. Greene, New York.—p. 305.
Id.: Report of an Epidemic. P. D. Rosahn and Ch'uan-K'uei Hu, New York.—p. 331.
Immunologic and Chemical Investigations of Vaccine Virus: II. Chemical Analysis of Elementary Bodies of Vaccinia. T. P. Hughes, R. F. Parker and T. M. Rivers, New York.—p. 349.
Bartonella Bodies in Blood of Nonsplenectomized Dog. J. B. McNaught, F. M. Woods and V. Scott, Rochester, N. Y.—p. 353.
Protective Action of Type I Antipneumococcus Serum in Mice: I. Quantitative Aspects of Mouse Protection Test. K. Goodner and F. L. Horsfall Jr., New York.—p. 359.
Id.: II. Course of Infectious Process. K. Goodner and D. K. Miller, New York.—p. 375.
Id.: III. Significance of Certain Host Factors. K. Goodner and D. K. Miller, New York.—p. 393.
An Apparatus for Culture of Whole Organs. C. A. Lindbergh, New York.—p. 409.
Rift Valley Fever: Report of Three Cases of Laboratory Infection and Experimental Transmission of Disease to Ferrets. T. Francis Jr. and T. P. Magill, New York.—p. 433.
Interstitial Bronchopneumonia: II. Production of Interstitial Mononuclear Pneumonia by Bordet-Gengou Bacillus. D. H. Sprunt, D. S. Martin and J. E. Williams, Durham, England.—p. 449.

Journal of Urology, Baltimore

34: 93-192 (Aug.) 1935

Paraglioma of the Suprarenal Gland. C. M. McKenna and L. E. Hines, Chicago.—p. 93.

Retroperitoneal Cyst Arising in Persistent Metanephros with Congenital Absence of Right Kidney and Ureter. L. W. Krauss and R. Straus, Cleveland.—p. 97.

Squamous Cell Carcinoma, Leukoplakia and Concretions of Megalo-Ureter F. M. Cochems and T. P. Grauer, Chicago.—p. 106.

Simple Chronic Ulcers of Urinary Bladder: Report of Unusual Case. J. A. Lazarus, New York.—p. 111.

Radical Perineal Prostatectomy for Carcinoma. H. C. Rolnick, Chicago. —p. 116.

Leiomyoma of the Epididymis: Report of Case and Review of Literature. A. H. Spivack, New York.—p. 122.

Primary Carcinoma of Cowper's Gland: Report of Case with Review of Literature. C. A. W. Uhle and G. F. Archer, Philadelphia.—p. 128.

Rationale of Epididymovasectomy in Genital Tuberculosis. H. E. Campbell, Foochow, Fukien, China.—p. 134.

Osteomyelitis Secondary to Infections of Genito-Urinary Tract: Report of Three Cases. H. L. Kretschmer and E. A. Ockuly, Chicago.—p. 142.

Racial Incidence of Urolithiasis. E. F. Reaser, Huntington, W. Va. —p. 148.

Studies of Rat's Genito-Urinary Tract: Quantitative Measurements of Intravesical Volume and Pressure and of Urethral Outflow. W. H. Schultz, Baltimore.—p. 156.

Impotence and Frigidity from Standpoint of Psychoanalysis. K. A. Menninger, Topeka, Kan.—p. 166.

New Device to Facilitate Drainage After Endoscopic Electric Revision. A. C. Drummond, New York.—p. 184.

Ureteral Stone Extractor. C. Ferguson, Ellis Island, N. Y.—p. 189.

Self-Locking Cystoscopic Stone or Foreign Body Forceps with Detachable Handle. I. Simons, New York.—p. 190.

34: 193-288 (Sept.) 1935

Fibromyxoneurosarcoma of Kidney in Adult. J. S. Eisenstaedt, Chicago. —p. 193.

The Cystic Kidney. J. F. Geisinger, Richmond, Va.—p. 202.

Tuberculous Meningitis Following Nephrectomy for Tuberculosis: Case Report with Review of Literature. J. H. Turner, Houston, Texas. —p. 216.

*Ureteropyeloneostomy for Hydronephrosis: New Operative Technic: Preliminary Report. S. Lubash, New York.—p. 222.

Neoarsphenamine in So-Called Sterile Pyuria. W. T. Briggs, Lexington, Ky.—p. 230.

Air Injections to Demonstrate Adrenals by X-Ray. G. F. Cahill, New York.—p. 238.

Primary Tumor of Female Urethra with Metastasis to Each Ureter. E. C. Shaw, Miami, Fla.—p. 244.

Congenital Valvular Obstruction of Posterior Urethra. H. E. Landes and R. Rall, Chicago.—p. 254.

Congenital Valves of Posterior Urethra. V. S. Counseller and J. G. Menville, Rochester, Minn.—p. 268.

Further Report on Cure of Hypospadias and Epispadias. A. B. Cecil, Los Angeles.—p. 278.

Observations on Emptying of Vasa Deferentia and Seminal Vesicles. S. F. Wilhelm, New York.—p. 284.

Ureteropyeloneostomy for Hydronephrosis.—In performing Lubash's ureteropyeloneostomy, the ureter is removed from its original site as near its insertion to the pelvis as possible, as the strictured area is utilized in its reimplantation. From this point on, the ureteropyeloneostomy of Kuster is carried out. The difference lies in the method of anastomosis. The ureter is incised downward on its anterior and posterior surface for a distance of 2 or 2.5 cm. and, after its insertion into its new mouth at the most dependent portion of the renal pelvis, the straps of the ureter are drawn outward laterally from the pelvis through two very small stab wounds on either side of the new neostomy opening and a mattress suture is employed to fix them in position. The knots are placed outside the renal pelvis. From this point on, Papin's method of transrenal drainage and resection of the redundant pelvis is carried out. Both the Garceau catheter that splints the new anastomosis and the Pezzer catheter that drains the kidney are brought out through the same nephrostomy wound. Nephropexy is employed if the kidney is mobilized. The author believes that the new features that he has added will help overcome some of the former handicaps of the operation, by reason of the following deductions: (1) there is little or no tension at the new point of anastomosis; (2) the true diameter of the ureteral orifice remains intact, as no sutures through its edges serve to cause shrinkage from scar tissue formation; (3) the two strap-like projections are brought outside the newly established pelvis, preventing any possibility of obstructing valvelike formation and (4) at the same time reducing tension from the point of anastomosis, and (5) no puckering or buckling can occur.

Laryngoscope, St. Louis

45: 657-740 (Sept.) 1935

Investigation on Bone Conduction in the Animal and in the Human. H. Kobrak, J. R. Lindsay and H. B. Perlman, Chicago.—p. 657.

*Acute Suppurative Disease of Petrous Pyramid: Report of Case with New Operative Approach. S. S. Quittner, Cleveland, and S. W. Gross, New York.—p. 670.

Otitic Meningitis: Pseudo Brain Abscess. M. Rabbiner, Brooklyn.—p. 676.

Etiology of Retrobulbar Neuritis. J. H. Dunnington, New York.—p. 685.

Present Status of Submucous and Turbinate Operation. W. M. Hunt, New York.—p. 692.

Polyps of Nasal Septum: Report of Two Cases. R. D. Russell, Chicago.—p. 698.

Observation on Treatment of Osteomyelitis of Skull: Report of Case. C. H. Smith, New York.—p. 703.

Cribriform Plate (Olfactory Groove) Meningiomas and Their Early Diagnosis. C. A. Elsberg, New York.—p. 712.

Immediate Transplantation of Bone, Cartilage and Soft Tissues in Accident Cases. W. W. Carter, New York.—p. 730.

Acute Suppurative Disease of Petrous Pyramid.—Quittner and Gross believe that the problem of the treatment of otitic meningitis and other intracranial complications lies mainly in their prevention. This implies the early recognition of impending intracranial disease and the institution of measures to prevent further advance of the process. The line of attack must follow the path of infection into the intracranial cavity and this can usually be suspected from the history of the development of the symptoms and a knowledge of the existing pathologic changes. In the case reported the persistence of an elevation of temperature and the leukocytosis following a mastoidectomy indicated the continuance of an infective process. The deep facial pain pointed to the petrous pyramid as the most probable location of the lesion. Deep seated homolateral facial pain, often referred to the temporal region and forward around the eye, is often the first symptom of an infection of the petrous pyramid and may exist without external rectus palsy. This early evidence of localized meningeal reaction may be manifested by an increase of cells in the spinal fluid and an increase in the spinal fluid pressure. The removal of the extradural septic focus and the institution of proper drainage at this time may prevent the development of a frank bacterial meningitis. Clinical signs of meningitis may be lacking even when many cells and organisms are found in the cerebrospinal fluid. This condition prevailed in the case reported, since at the time of the first puncture 8,000 cells and many organisms were found, yet none of the usual clinical signs of meningitis were present. It is highly probable that, had a spinal puncture been done earlier in the preoperative course, the fluid would have yielded an increase in cells without organisms. The optimal time for operative intervention is when meningeal irritation exists without an actual bacterial meningitis. The approach to the petrous pyramid described by the authors proved to afford a satisfactory exposure and adequate drainage. The lesson to be learned from the case reported is the importance of doing a lumbar puncture early when an intracranial complication is suspected following middle ear disease. When a needle of small caliber is used and only enough fluid is removed for the required examinations, the procedure is practically without danger. To delay a lumbar puncture until signs of a frank meningitis develop is to lose valuable time during which an overwhelming invasion of the meninges may occur.

Maine Medical Journal, Portland

26: 123-134 (Aug.) 1935

Discussion of Modern Treatment of Pelvic Inflammation. H. M. Goodwin, Bangor.—p. 128.

Medical Annals of District of Columbia, Washington

4: 209-230 (Aug.) 1935

Artificial Pneumothorax: Its Place in Treatment of Pulmonary Tuberculosis. C. P. Cake, Washington.—p. 209.

Treatment of Secondary Anemia. S. O. Foster, Washington.—p. 213.

Mycotic Diseases of the Ear. Ella M. A. Enlows, Washington.—p. 217.

Hemangioma of the Ovary: Report of Case in Child Three and One-Half Years of Age. J. P. Shearer, Washington.—p. 223.

Statistical Study of Acute Appendicitis in Washington Hospitals in 1928 and 1933. P. S. Putzki, Washington.—p. 225.

Missouri State Medical Assn. Journal, St. Louis

32: 351-386 (Sept.) 1935

Use of Mecholyl in Arthritis. O. Abel Jr., St. Louis.—p. 351.
Quinidine Sulphate: Its Action and Uses. P. T. Bohan, Kansas City. —p. 353.
*Heart Disease in Children. H. M. Gilkey, Kansas City.—p. 356.
Relationship of Late Menstruation to Carcinoma of Corpus Uteri. R. J. Crossen and J. E. Hobbs, St. Louis.—p. 361.
Urinary Incontinence. D. K. Rose, St. Louis.—p. 363.
Minimal Visual Requirements for Safe Automobile Driving. R. E. Mason, St. Louis.—p. 367.
Chronic Appendicitis: Diagnosis and Treatment. W. H. Cole, St. Louis.—p. 369.
Ovarian Therapy in Nose and Throat Surgery. E. S. Connell, Kansas City.—p. 372.
Cholecystitis: Tetraiodophenolphthalein in Treatment of Certain Selected Cases. J. S. Young, St. Louis.—p. 374.

Heart Disease in Children.—Gilkey believes that it may be possible through familial incidence to ascertain what children are most susceptible to cardiac disease and to institute a few preventive measures at an early age and thus possibly obtain better results. The common cold is of great importance (especially during the winter months) and may be the cause of a reactivation with a fatal outcome. Possible danger of colds, sore throats and other infections should be explained and reiterated to the patient. Although there is no positive proof that the routine removal of tonsils prevents primary manifestations or minimizes reactivations of rheumatic fever, the author believes that a clear throat will predispose less to infection of the upper respiratory tract. A careful study of the sinuses is still justified in the type of child included in this study. Tonsillectomy is an important factor in preventing endocarditis. The mortality rate is nearly 50 per cent less in children whose tonsils had been removed before the initial attack. The valve or number of valves involved in rheumatic heart disease has little to do with prognosis as compared to the virulence of the infection, the resistance of the host and the number of reactivations. The average time of manifestation is ten years. Familial incidence is as great as in tuberculosis. The use of intravenous preparations of hemolytic streptococci with the hope of lessening hypersensitivity is still in the experimental stage but offers some hope. Complement fixation may be used as a measure of the antibody content of serum of the patient but is not as reliable as the skin tests to indicate sensitivity.

Nebraska State Medical Journal, Lincoln

20: 321-360 (Sept.) 1935

Medical Organization or Political Control. O. J. Fay, Des Moines, Iowa.—p. 321.
Transurethral Resection of Prostate, with Especial Reference to Follow Up. A. D. Munger and E. E. Angle, Lincoln.—p. 326.
Early Diagnosis of Syphilis. O. J. Cameron, Omaha.—p. 331.
Modern Management of Cases of Peritonitis. H. H. Everett and R. H. Whitham, Lincoln.—p. 334.
Clinical Work at Nebraska Orthopedic Hospital. H. W. Orr, Lincoln. —p. 339.
Schiller Test for Cancer of Cervix. E. C. Sage, Omaha.—p. 344.
Recent Developments Concerning Tumors of Breast, with Especial Reference to Transillumination. H. H. Davis, Omaha.—p. 345.
Tumors of Testicle, with Particular Reference to Aschheim-Zondek Test. F. C. Hill, Omaha.—p. 346.

New England Journal of Medicine, Boston

213: 385-446 (Aug. 29) 1935

Herniation or Rupture of Intervertebral Disk into Spinal Canal: Report of Thirty-Four Cases. W. J. Mixter and J. B. Ayer, Boston.—p. 385.
Syndrome of Anemia, Glossitis and Dysphagia: Report of Cases. W. B. Hoover, Boston.—p. 394.
Epidemic Benign Myalgia of Neck. B. F. Massell and P. Solomon, Boston.—p. 399.
Coexisting Intra-Uterine and Extra-Uterine Pregnancy. H. H. Faxon, Boston.—p. 401.
Coronary Occlusion in Community Practice. D. Halbersleben, Boston. —p. 403.
Jacob Bigelow, M.D., LL.D. C. E. Stellhorn, Brooklyn.—p. 405.
Irradiation Treatment of Tumors: Late European Developments. C. F. Ball, Rutland, Vt.—p. 407.
How Grievances Are Dealt With Under English Health Insurance Scheme. G. F. McCleary, New York.—p. 412.
Paralytic Treatment Other Than Respiratory: Important Rules in After-Care of Poliomyelitis. A. T. Legg, Boston.—p. 415.

Public Health Reports, Washington, D. C.

50: 1125-1164 (Aug. 23) 1935

Sickness Among Male Industrial Employees During First Three Months of 1935. D. K. Brundage.—p. 1125.
Study of Four Hundred and Fifty Fatal Cases of Heart Disease Occurring in Washington (D. C.) Hospitals During 1932, with Especial Reference to Etiology, Race and Sex. O. F. Hedley.—p. 1127.

Southern Medical Journal, Birmingham, Ala.

28: 773-866 (Sept.) 1935

Vascular Changes in Glomeruli of Kidney and Effect on Other Structures of Nephron. L. A. Turley and Wilma J. Green, Oklahoma City.—p. 773.
Chronic Subdural Hematoma. C. C. Nash, Dallas, Texas.—p. 779.
Anatomy of Prostate and Vesical Neck. R. E. Van Duzen, Dallas, Texas.—p. 785.
Prolonged Intense Heat in Treatment of Pelvic Infections. G. A. Williams, Atlanta, Ga.—p. 791.
*Trichomonas Vaginalis and Monilia Albicans as Causes of Leukorrhea. K. J. Karnaky, Houston, Texas.—p. 795.
*Value of Hyperpyrexia in Treatment of Bronchial Asthma. K. Phillips and S. Shikany, Miami, Fla.—p. 801.
Use of Roentgen Ray in Infections. R. E. Myers, Oklahoma City. —p. 814.
End Results of Leg Lengthening. G. B. Stephenson and H. A. Durham, Shreveport, La.—p. 818.
Pterygium Operation. J. O. McReynolds, Dallas, Texas.—p. 823.
Technic and Uses of Suspension Laryngoscopy. F. E. LeJeune, New Orleans.—p. 828.
Management of Blood Stream Infection Following Mastoiditis: Illustrated with Lantern Slides. E. G. Gill, Roanoke, Va.—p. 830.
Newer Knowledge of Vitamins. J. H. Musser, New Orleans.—p. 834.
Chemistry of Vitamins. J. C. Forbes, Richmond, Va.—p. 839.
Some Clinical Aspects of Dietary Deficiencies. J. B. Youmans, Nashville, Tenn.—p. 843.
The Colon: Consideration of Its Important Diseases and Disordered Functions. L. C. Sanders, Memphis, Tenn.—p. 848.
Constipation and Bowel Training. F. H. Lancaster, Houston, Texas. —p. 851.
The Importance of the Private Physician in Public Health Program. J. A. Milne, Jackson, Miss.—p. 855.

Trichomonas Vaginalis, Monilia Albicans and Leukorrhea.—Karnaky speaks of two common causes of a discharge and a vaginitis: Trichomonas vaginalis, a protozoan, and Monilia albicans, a fungus. They are often overlooked because a fresh smear is seldom examined in patients complaining of a discharge. Also, few technicians are told to look for these organisms and few are able to recognize them. Trichomonas vaginalis is capable of causing a malodorous discharge. Usually in Monilia infections spots are seen in the vagina of gynecologic and flakes in that of obstetric patients. In the differential diagnosis of Trichomonas vaginalis the discharge increases after the menses and persists despite most methods of treatment; there is constant leukorrhea in most cases; itching around the vulva is common; the discharge scalds or burns the thighs whenever it comes in contact with them and local application of gentian violet alone will not clear the infection; the parasite is seen in pregnancy as well as in nonpregnancy, is diagnosed by examining a fresh smear, is not so often seen in stained smears, produces a malodorous discharge, is a protozoan and causes itching right after menses and more often during the day. In Monilia albicans the discharge increases before the menses and is easily treated; there is a remission in the production of the discharge; itching around the vulva is not so common; the discharge apparently does not burn or scald the thighs; gentian violet clears the infection almost instantaneously; the parasite is seen most commonly during pregnancy and is not so common in gynecologic patients, is diagnosed by a fresh smear, is seen best in stained smears, apparently does not produce a malodorous discharge, is a fungus and causes itching at most any time and more so at night. The dry method of treatment with corn starch is given. It is concluded that a 2 per cent solution of ethyl alcohol gentian violet or a 5 to 7 per cent aqueous solution of gentian violet is better for the treatment of Monilia albicans. The male is apparently a source of infection and reinfection. Trichomonas vaginalis is a common cause of postoperative leukorrhea. Trichomonas vaginalis is recognized as a pathogenic organism.

Hyperpyrexia in Treatment of Bronchial Asthma.—Phillips and Shikany studied the value of hyperpyrexia in fifty cases of bronchial asthma. Practically all other therapeutic factors were eliminated. Clinical, biochemical and laboratory

studies were carried out on all patients in order to determine the physiologic and biochemical changes associated with the treatment. Attention has been called to the clinical and laboratory data which indicate a lowered general metabolism in asthma. Improvement followed fever treatments and the clinical results indicate that 82 per cent received definite benefit. Biochemical and laboratory studies, however, indicate that more than 40 per cent of these were possibly only temporarily relieved. At present, after an observation period of six months, 32 per cent seem to have obtained lasting relief. The author believes that ten treatments should be the minimum of a course. It would appear that from twelve to fifteen are possibly still better, but apparently there is no improvement beyond this number. Two treatments a week are preferable. Temperatures maintained above 105 F. rectally have no advantage over those ranging from 102 to 105 F. Temperatures sustained for four hours produce results comparable to those extending over longer periods.

Surgery, Gynecology and Obstetrics, Chicago

61: 289-432 (Sept.) 1935

Primary Malignant Tumors of Ovary. W. T. Murphy, Buffalo.—p. 289.
Hypoplasia of Kidney. R. H. Herbst and C. W. Apfelbach, Chicago. —p. 306.
Generalized Hypertrophic Pulmonary Osteo-Arthropathy: Experimental and Clinical Study: Report of Two Cases. E. L. Compere, W. E. Adams and C. L. Compere, Chicago.—p. 312.
Pregnancy Complicating Diabetes. Priscilla White, Boston.—p. 324.
Compound Colored Alcoholic Solution of Mercuric Chloride for Skin Disinfection. J. A. Vaichulis and L. Arnold, Chicago.—p. 333.
*Early Diagnosis of Chorionepithelioma. A. Mathieu, Portland, Ore., and A. Palmer, San Francisco.—p. 336.
*Hyperostosis Frontalis Interna: Preliminary Study. S. Moore, St. Louis.—p. 345.
Lymphatic Connection Between Gallbladder and Liver. R. W. Bartlett, G. Crile Jr. and E. A. Graham, St. Louis.—p. 363.
Reconstruction of Female Urethra. S. H. Harris, Sydney, Australia. —p. 366.
Pulmonary Embolism Following Trauma. J. S. McCartney, Minneapolis. —p. 369.
Treatment of Atonic Bladder. W. F. Braasch and G. J. Thompson, Rochester, Minn.—p. 379.
*Traumatic Ossifying Periostitis of the New-Born. S. T. Snedecor, R. E. Knapp and H. B. Wilson, Hackensack, N. J.—p. 385.
Constructive Critical Analysis of Maxillary Sinus Surgery. E. F. Ziegelman, San Francisco.—p. 388.
Trigeminal Neuralgia: Experiences with, and Treatment Employed in Four Hundred and Sixty-Eight Patients During the Last Ten Years. G. Horrax and J. L. Poppen, Boston.—p. 394.
End Results with Watkins' Interposition Operation. H. S. Everett, Baltimore.—p. 403.

Early Diagnosis of Chorionepithelioma.—Mathieu and Palmer report the early diagnosis in a case of chorionepithelioma, in which following the curettage for the removal of hydatid material the patient was absolutely free from symptoms. There was no more bleeding, her blood count increased, the uterus and pelvic contents were normal to palpation, she was in good health and free from complaints and she had gained weight. There was no cough or any sign of lung involvement. The sedimentation rate remained slightly increased and the Friedman test was persistently positive. The authors have been able to follow the continuity of the progress through pregnancy and hydatid mole, chorionepithelioma and eventual cure. The free use of the Friedman test revealed the sequence of events before and after operation. The diagnosis rested entirely on two facts: the history of mole and the persistence of anterior pituitary-like substance in the urine. Whether or not there can be a negative pregnancy test in the presence of chorionepithelioma can be determined only by critical observation of the results obtained in testing for the pituitary substance in many cases of known chorionepithelioma. It may eventually be possible to foretell the degree of the malignant state of a known chorionepithelioma by biologic quantitative assay of the patient's urine. It seems reasonable to believe that in cases of chorionepithelioma, diagnosed early, one need not remove the ovaries. In the authors' case only a supravaginal hysterectomy was done, and there was no evidence of extension, recurrence or metastases after two years. In another case, a complete hysterectomy was done because of severe lacerations of the cervix, and the right ovary was removed only because it was firmly adhering to the posterior sheaf of the right broad ligament. The patients were both young women, and it hardly seemed reasonable to remove ovaries that had all the gross appearance of being normal. The results seem to have justified the procedure. The authors believe that chorionepithelioma may be definitely diagnosed shortly after its inception. Every patient who passes a mole should have her urine examined for anterior pituitary-like substance by the Friedman test monthly for at least a year. In this way a developing chorionepithelioma might be diagnosed early and removed before symptoms appear or before metastases develop.

Internal Frontal Hyperostosis.—Moore points out that internal frontal hyperostosis is by no means the medical curiosity that the percentages he gives appear to make it. There is a total of sixty-five cases described in the literature, all but three being either necropsy reports or composed of museum specimens. To this number seventy-two living examples of the condition have been added. In spite of the different degrees or types of the disorder, the cases have an astonishing similarity to one another and there is variation only in the intensity of the symptoms. Against the severity of the syndrome stands the fact that there are many rational therapeutic measures that may alleviate or possibly arrest the disorder. The picture of the syndrome in its complete form has been published by several writers; description of its less advanced development is something new. Two hypotheses regarding internal frontal hyperostosis have been offered: that there is a special mechanism for the control of calcium metabolism, existing only in the female, and that the disorder of such a mechanism is the cause of the syndrome accompanying internal frontal hyperostosis. There is presented a fruitful field for investigation of the fundamentals that underlie the physiology and chemistry of calcium and fat metabolism, and possibly a heretofore unknown structure with an internal secretion. The disease will be found with greater frequency if it is sought for. It is possible that investigation of this disorder may throw much light on neuropsychiatric pathology. There is a question as to whether or not the unknown causative factor that produces the syndrome does not also give rise to the neuropsychiatric symptoms as well as the hyperostosis. Internal frontal hyperostosis as a name for this syndrome suffers from the drawback inherent in using a single feature of a disorder to designate the whole. It is possible that the hyperostosis, though the surest sign, is the least important manifestation of the disease.

Traumatic Ossifying Periostitis of the New-Born.—Snedecor and his associates describe a new type of birth injury in a series of breech extractions. They conclude that the injury is probably due to (1) too strong traction on the extremity, (2) a twisting pull on the leg due to inability on the part of the obstetrician to rotate the line of traction with the rotation of the fetus as it accommodates its large diameters to those of the birth canal, (3) the inability to bring both feet down so that traction may be equally distributed and (4) the too hasty attempt to complete the delivery. In these injuries immediate roentgen examination is negative. The calcium deposit becomes visible only after one or two weeks. Recovery took place spontaneously in all the cases observed by the authors. Recovery time seems to be in direct proportion to the extent of the injury—from four to twelve weeks—and no permanent disability has resulted. In two cases the infants were followed until they walked. A tearing or stripping of the periosteum of the femur or humerus occurs most often at its weakest point of attachment, the epiphysis, and the maximal strain of the traction is imposed on the proximal epiphysis. If the trauma is more severe, the authors observed that the stripping follows down the shaft with further subperiosteal hemorrhage, as in one of their cases. Osteomyelitis and epiphysitis were both suggested in their first case. Fracture was the opinion of one roentgenologist. Sarcoma was also considered. In truth, the lesion is similar to myositis ossificans, which has its etiology in some instances, at least, in torn periosteum. A rapid proliferation of the periosteal osteophytes takes place with deposition of calcium. The roentgenologically visible periosteal injury is but part of the hemorrhage from muscle and fascial tearing. Heretofore, the cause of pain, limitation of motion, swelling and dislocation of the injured part, which are the chief clinical observations, have been attributed to injury of soft tissues only.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

47: 319-388 (Aug.-Sept.) 1935

Granuloma Annulare. E. O. Halliwell and J. T. Ingram.—p. 319.
Calcinosis: Report of a Case of Calcinosis Universalis. M. Bolam. —p. 340.

British Journal of Ophthalmology, London

19: 481-544 (Sept.) 1935

Study of Central and Peripheral Light and Dark Adaptations with Varying Backgrounds. R. Pickard.—p. 481.
Unilateral Anophthalmos with Cyst: Case. K. Kanda.—p. 512.

British Medical Journal, London

2: 327-364 (Aug. 24) 1935

Correlation of Radiologic and Operative Findings in Chronic Appendicitis. W. L. Harnett and G. Galstaun.—p. 327.
Benign Neoplasms of Bronchus: Records of Nine Cases. H. V. Morlock and A. J. S. Pinchin.—p. 332.
Some Points in Connection with Sclerocorneal Trephining. R. H. Elliot.—p. 334.
Progressive Postoperative Gangrene of Skin. A. J. Blaxland.—p. 336.
*Persistent Headache During Lactation: Report of Five Cases and Commentary. J. H. Beilby.—p. 337.
*Prevalence of Weil's Disease in Certain Occupations. J. M. Alston and H. C. Brown.—p. 339.

2: 365-438 (Aug. 31) 1935

Some Comments on Medical Training and Practice and Their Regulation. K. W. Monsarrat.—p. 365.

Persistent Headache During Lactation.—Beilby presents five cases of persistent headache associated with the nursing period which characteristically disappears on weaning. Of varying severity, it is usually frontal, being described as "behind the eyes"; but it may affect the whole head, with spasms referred particularly to the occipital region, commencing typically at or after the first week of the puerperium. None of the patients were primiparas. No pathologic basis was traceable for this symptom. Pregnancy and parturition were normal; the urine was normal before and after confinement, except in one case in which there was a trace of albumin during the later months (summer). There was no rise in blood pressure during the puerperium; the fundi were normal. There was no uncorrected visual defect. Except in one case there was no anemia. Drugs at best gave only temporary relief. The persistent headache appears to occur chiefly among those of poorer circumstances and/or poorer physical condition, in whom nursing is an added burden. Dental caries is more likely part of the same condition than a causative factor. Treatment is prophylactic—that is, antepartum therapy with suitable diet, vitamins, iron and calcium; or, when this has been neglected or through circumstances impracticable, similar treatment applied with a view to improving the general condition during the puerperium or, finally, weaning if the symptoms justify it.

Weil's Disease and Certain Occupations.—Alston and Brown state that nine of forty-five sewer workers, who were not aware of having had any form of jaundice, showed significant serum agglutinins for Leptospira icterohaemorrhagiae. Evidence is given that protective antibodies are present in specimens of human serum that show agglutinins. Prophylactic inoculation of those exposed to risk appears to offer a means of prevention of this disease, and work on the preparation of a suitable vaccine in a medium containing no foreign protein is in progress.

Clinical Journal, London

64: 309-352 (Aug.) 1935

Dyspepsia. J. J. Conybeare.—p. 309.
Coli Infections of Urinary Tract. T. E. Hammond.—p. 317.
Pleural Effusions and Associated Lung Lesions. R. Ellis.—p. 325.
Acute Intussusception in Infants. F. Forty.—p. 330.
Obstetric Difficulties in General Practice. S. G. Luker.—p. 333.
*Observations on Erythema Nodosum. W. D. MacKinnon.—p. 339.

Erythema Nodosum.—MacKinnon states that his records show that erythema nodosum had its greatest incidence about the time of an influenza epidemic; cases occurred before, during and after the epidemic, but mostly before. Erythema nodosum occurred when an epidemic of whooping cough coincided with an epidemic of influenza. But in an extensive epidemic of whooping cough, when no influenza was present, there were no cases of erythema nodosum. Mumps occurred when influenza was prevalent and there were cases of erythema nodosum. In a large epidemic of mumps, however, no influenza was present and no cases of erythema nodosum showed up. Thus measles, whooping cough and mumps do not seem to be associated with erythema nodosum as is influenza, and yet the author points out that in his experience epidemics of measles and whooping cough are more productive of tuberculosis than epidemics of influenza. Nine chickenpox epidemics were invariably accompanied by cases of herpes zoster, but only three, which occurred in association with influenza, showed any cases of erythema nodosum. Yet erythema nodosum seems to be closely connected with chickenpox and with herpes zoster. He concludes that erythema nodosum was not associated with acute manifestations of rheumatism, although the majority of the patients were of a rheumatic diathesis. The maximal incidence of erythema nodosum was in years in which the apex of incidence also occurred in other diseases, which are known to be due to the "filtrable viruses."

East African Medical Journal, Nairobi

12: 127-158 (Aug.) 1935

Preliminary Notes on Control of Flies. J. P. McMahon.—p. 128.
Relationship of Yaws and Syphilis: Are They Two Diseases or One? J. A. Carman.—p. 135.
Ancylostomiasis in Digo District. H. D. Tonking.—p. 149.

Indian Medical Gazette, Calcutta

70: 421-480 (Aug.) 1935

Record of Five Years' Antenatal and Infant Welfare Work on Estates in Malaya. J. G. Reed.—p. 421.
Investigations on Cerebrospinal Fever in Nasirabad (Rajputana) During Period 1931 to 1934: Part I. E. A. R. Ardeshir.—p. 435.
Infective Warts and Their Treatment. L. M. Ghosh and P. A. Maplestone.—p. 441.
Snake Venoms in Pharmacology and Therapeutics. R. N. Chopra and J. S. Chowhan.—p. 445.

International Journal of Psycho-Analysis, London

16: 263-398 (July) 1935

Early Female Sexuality. E. Jones.—p. 263.
Psychoanalysis of Space. P. Schilder.—p. 274.
Genesis of Feeling of Unreality. C. P. Oberndorf.—p. 296.
Reassurance as Means of Analytic Technic. Melitta Schmideberg.—p. 307.
Passivity, Masochism and Femininity. Marie Bonaparte.—p. 325.
Phallic Passivity in Men. R. Loewenstein.—p. 334.
Some Aspects of Time Difficulties and Their Relation to Music. Sybille Yates.—p. 341.

Irish Journal of Medical Science, Dublin

No. **116:** 337-536 (Aug.) 1935

*Treatment of Cervical and Broad Ligament Fibroids. D. J. Cannon. —p. 518.
Fibroma of Ovary. D. J. Cannon.—p. 522.

Treatment of Cervical and Broad Ligament Fibroids.—Cannon describes several cases and gives the following principles for the treatment of cervical and broad ligament fibroids: 1. In the case of large cervical fibroids growing from the posterior cervical wall or of large broad ligament tumors that have become retroperitoneal, the uterus should be removed with the tumor. 2. In order to minimize the amount of bleeding from the uterine vessels during the process of enucleation of the tumor the aim should be to remove the uterus by a right-to-left or left-to-right procedure before attempting enucleation of the tumor. 3. In the case of cervical tumors that are not too large and are growing from the anterior cervical wall or of broad ligament tumors that have not yet established retroperitoneal relationships, the uterus may be left, provided there is not much blood loss during the process of enucleation and that hemostasis of the myomatous bed can be secured. 4. During the removal of either a cervical or a broad ligament tumor, injury to the ureters can be avoided by working inside the capsule of the tumor. 5. Should a patient with a large fibroid complain of pain and abdominal tenderness, whether the temperature is raised or not, infection of the tumor should be

considered and preliminary vaccine treatment followed by a preoperative injection of nuclein to stimulate leukocytosis should be instituted. 6. If the intestine is markedly adherent to the tumor that is suspected of being infected and it is believed that the adherent intestine is the cause of the infection, instead of being separated from the tumor it should be resected if possible. 7. Should spreading peritonitis supervene in spite of all precautions, as patients die not so much from peritoneal toxemia as from intestinal toxemia, treatment based on the best current thought in regard to the pathologic changes of the condition should be instituted. 8. Unless mechanical obstruction is evident, operative intervention should be postponed as long as possible.

Journal of Laryngology and Otology, London

50: 649-728 (Sept.) 1935

Origins of Hearing—Random Variation or Convergent Evolution—Study of Auditory Organ and Its Swim-Bladder Connections in Fishes. H. M. Evans.—p. 649.

Recent Advances in Electrophysiology of Hearing. C. S. Hallpike.—p. 672.

Journal of Neurology and Psychopathology, London

15: 289-384 (April) 1935

The "Dreamy State" as an Epileptic Aura, with Remarks on Occurrence of Elaborate Mental States at the Beginning of Epileptic Fits. M. Levin.—p. 289.

The "Frog" Child: Congenital Lesion of Corpus Striatum? R. G. Gordon.—p. 297.

Blood Vessel Tumors of the Brain, with Particular Reference to Lindau Syndrome. G. S. Hall.—p. 305.

Acute Toxic Chorea: Case. R. G. Gordon and R. M. Norman.—p. 313.

Unusual Size of Intraventricular Spongioblastoma in Case of Tuberous Sclerosis. L. C. Cook and A. Meyer.—p. 320.

Laurence-Moon-Biedl Syndrome: Report of Two Cases. Pauline Klenerman.—p. 329.

16: 1-96 (July) 1935

*Observations on Motor Phenomena of Hysteria. I. M. Allen.—p. 1.

The Brain of the Mental Defective: Part III. Width of Convolutions in the Normal and Defective Person. W. R. Ashby and R. M. Stewart.—p. 26.

Respiratory Rhythm in Normal and Psychotic Subjects. A. S. Paterson.—p. 36.

*Some of the Structural Abnormalities Presented by the Brains of Thirty-One Certified Mental Defectives. R. J. A. Berry.—p. 54.

I. Barrier Permeability to Bromide and Protein Content of Cerebrospinal Fluid. S. Katzenelbogen.—p. 70.

II. Barrier Permeability to Bromide and Sodium Chloride Content of Cerebrospinal Fluid. S. Katzenelbogen.—p. 73.

Observations on Motor Phenomena of Hysteria.—Allen investigated fifty-nine patients, who were subjected to hysteria, with particular reference to the disturbances of motor function. The essential and primary effect in the motor system is inhibition of the motor impulse to the muscle or group of muscles which in the normal subject would contract in response to that impulse. Inhibition of the motor impulse arises at the unconscious level of higher cortical functions and is produced by either a conflict in the personality, both sides of which are excluded from consciousness, or by that factor in a conflict which is excluded from consciousness to allow the other factor to control the conscious life of the personality. The immediate motor effect is inhibition of agonists and is followed by contraction of antagonists or of fixation muscles. According to the degree of inhibition, the clinical effects, in order of lessening severity, are flaccidity of muscles in the part concerned, flaccidity of muscles with contraction of fixation muscles and failure of agonists to contract followed by contraction of antagonists. The last is the most common motor phenomenon. These effects are produced in the same way whether the original motor impulse arises as a result of voluntary effort, voluntary effort at command or in response to a sensory stimulus as in eliciting the plantar reflex. The stretch reflex acts normally in the muscles of the hysterical limb, although, when the muscle is flaccid, tone is usually below the threshold at which the reflex comes into action and repeated or prolonged stretch is needed to bring it above that threshold. Local motor phenomena arise as a result of inhibition of agonists, contraction of antagonists, the application of stretch to agonists and contraction of agonists in that order. Hysterical tonic paralysis, tonic paralysis with contracture, tonic paralysis with tremor, tremor with minimal tonic paralysis and tremor are described as they occur in the hysterical subject, and their development is shown to depend on the sequence of effects of local motor phenomena. Attention is drawn particularly to the clinical effects of these phenomena in the face, abdominal muscles and lower limb. The effect of hysterical motor phenomena on tendon reflexes and the plantar reflex is described. The need for attention to every detail in the examination and interpretation of the plantar reflex is stressed.

Abnormalities Presented by Brains of Mental Defectives.—From a study of thirty-one defective brains Berry observed that the defective brain is 20 per cent smaller than that of the lowest normal, that even within this low standard the range of variation is considerable and that there is a measurable disproportion between the main prerolandic and postrolandic cortical constituents, this disproportion being particularly noticeable in the parietal region. In view of the anatomic position of the parietal lobe relative to the cuneus, superior temporal lobe and postcentral gyrus—that is, to the cortical areas at which visual, acoustic and somesthetic impulses are received first—it seems impossible to doubt that, when the parietal lobe is underdeveloped, as in these defectives, the reception, association and coordination of impressions derived from the organs of special sense must be so impaired as to result in serious mental deficiency. There is, therefore, an adequate neurologic explanation of the mental status of the present series of cases. Bolton's insistence on the importance of an adequately developed and well proportioned prerolandic effector area (frontal lobe) in all normal mental activities fully bears out the present investigation and particularly the irregularities between the frontal effector area and the rest of the brain. In persons with brains so irregularly developed and so lacking in the proper proportions of receptor and effector cortices—that is, in defectives—there must necessarily be a diminished sensibility to and perception of the external world around them. They thus have to rely far too much on purely bodily stimuli from within, with results that profoundly alter their mentality and may even make them react to their human environment in an abnormal or asocial manner, and this defectives—especially the lower grade ones—most certainly do.

Journal of Tropical Medicine and Hygiene, London

38: 213-224 (Sept. 2) 1935

The Spirochete of Infective Hemorrhagic Jaundice Found in Rats in Rome. F. Marchesi.—p. 213.

Ulcer Syndrome in Tropical Africa. A. A. F. Brown.—p. 215.

Lancet, London

2: 355-410 (Aug. 17) 1935

Morbid Anatomy of Caries of Thoracic Spine in Relation to Treatment. H. J. Seddon.—p. 355.

*Control of Whooping Cough with Serum and Vaccine: Uses of New Skin Test. D. Paterson, R. H. Bailey and R. G. Waller.—p. 361.

*"Pregnancy" Test in Relation to Death of Ovum. P. M. F. Bishop.—p. 364.

Thrombo-Angiitis Obliterans (Buerger's Disease): Gassing as an Etiologic Factor. J. B. McDougall and J. H. Crawford.—p. 366.

*Thrombosis of Pampiniform Plexus. D. McGavin.—p. 368.

Congenital Malaria: Report of Case in One of Twins. N. C. Tanner and R. F. L. Hewlett.—p. 369.

Effect of Sudden Severe Anoxemia on Function of Human Kidney. R. A. McCance.—p. 370.

2: 411-464 (Aug. 24) 1935

Rheumatism and Its Results. K. D. Wilkinson.—p. 411.

Indications and Results of Phrenic Nerve Operations. H. M. Davies.—p. 418.

Cardiac Hypertrophy in Experimental Nephritis. J. B. Duguid.—p. 421.

Resection of Rectum with Restoration of Continuity. C. A. Pannett.—p. 423.

Rheumatic Heart Disease and Vitamin C. C. B. Perry.—p. 426.

Serum and Vaccine in Whooping Cough.—Paterson and his associates made an attempt to produce a satisfactory test that could be used in the consulting room to show (1) whether a child has had an infection of the Bordet-Gengou bacilli on some previous occasion and (2) whether specific treatment in a noninfected child had been of any avail after a course of injections. The vaccine is injected intradermally into the flexor surface of the forearm, the result being read after twenty-four and forty-eight hours. A positive test is seen as an area of hyperemia round the site of the injection, ranging in size from a sixpence to a shilling in diameter. It is transitory in nature,

and some experience is required to make accurate readings. It should be seen in twenty-four and forty-eight hours and tends to disappear after this. Just as a marked reaction may be expected in adults with the Mantoux test, the same marked reaction may be expected in adults with this pertussis test, and smaller quantities, even 0.05 cc., will give a definite positive. The authors' procedure of active immunization varies slightly from that recommended by Sauer in that three biweekly injections are made instead of three weekly ones. Alternate arms are used each time, the deltoid region being injected the first week and the triceps region the second week, the deltoid region again being used the third week. Skin tests are performed before, during and after the injection. The skin tests become positive approximately one week after the last injection. This appears to show that, contrary to what Sauer claims for the vaccine, an allergic state is developed which gives a hypersensitiveness to the skin in from three to four weeks after the initial dose of vaccine, and the child then shows a positive skin test. This gives the physician some idea as to whether or not the treatment is effective and agrees with the result of vaccination in other diseases. Whether or not immunization is complete then it is difficult to say. Possibly it reaches its height at four months, as Sauer suggests.

Pregnancy Test in Fetal Death.—Bishop states that, when intra-uterine death is suspected clinically, a negative pregnancy reaction will confirm this suspicion; but a positive reaction may still occur as long as three months after the death of the ovum and cannot therefore be accepted as showing that the fetus is still alive. A comparison between the estrogenic reaction and the Aschheim-Zondek and Friedman tests shows that the former becomes negative considerably sooner after fetal death than the latter. It may, however, still be positive three weeks after the death of the ovum, so that a positive result is by no means certain evidence of a living embryo. The results obtained in the cases investigated throw no fresh light on the factors that regulate the secretion of gonadotropic hormones by the placenta.

Thrombosis of Pampiniform Plexus.—McGavin cites two cases of thrombosis of the pampiniform plexus because its apparently spontaneous occurrence is not familiar and the sufferers are liable to be treated by orchidectomy. Both patients were of middle age, and in both the left side was affected. In neither was there an obvious exciting cause, such as trauma or infection, nor had there been any history of preceding varicocele or an abnormal position of the testicle. In neither case were the seminal vesicles diseased, nor were there firm nodules or softened areas in the prostate. Active spermatogenesis was proceeding in one case, and there was no reason to believe that it had been stopped in the other. Microscopically the walls of the vessels in both spermatic cords gave evidence of degeneration. In one patient the pain was of sudden onset, whereas that of the other began more gradually. The pain of the one was brought on by standing, while that of the other was increased by coughing or lifting. If the patient is examined soon after the onset, epididymo-orchitis is most likely to be simulated, whether of the gonococcic, the coliform or the uncommon acute tuberculous type. Torsion of the spermatic cord may be suggested, although in the thrombosis there would not be the associated shock, and the testis would be well in the scrotum and not acutely tender. A diffuse hematocele of the cord would give a history of sudden onset of severe pain during some effort. Cases that are seen a few weeks after the onset are liable to be diagnosed as tuberculous epididymo-orchitis. In these the mode of onset, the short history, the absence of any beading of the vas and the negative rectal examination would be valuable points. The probable freedom of the tail of the epididymis from involvement may also be useful, but a hematogenous tuberculous epididymitis starting in the head is a possibility that impairs the value of this criterion. These later cases may occasionally resemble malignant disease of the epididymis. The importance of recognizing a thrombosis of the pampiniform plexus lies in its bearing on treatment. Should it be confused with certain other diseases there is a possibility of an unnecessary orchidectomy. This is especially to be avoided, since the microscopic appearances suggest that active function continues in the testicle on the affected side.

Tubercle, London

16: 529-576 (Sept.) 1935

Course, Complications and Prognosis of Open Pulmonary Tuberculosis in Children. E. Cochrane.—p. 529.

Occurrence of Chrysiasis Following Treatment by Gold Salts: Note. W. C. Fowler.—p. 539.

Prevention of Tuberculosis in Childhood by Methods of Separation. G. G. Kayne.—p. 541.

Quart. Bull., Health Org., League of Nations, Geneva

4: 129-322 (March) 1935

Syphilis Treatment: Part I. Enquiry in Five Countries Carried out Under Auspices of the Health Organization of League of Nations: Part II. Recommendations. H. Martenstein.—p. 129.

*Blood Culture of Tubercle Bacillus According to Loewenstein: I. Report on Detection of Tuberculous Bacillemia by Loewenstein Method. A. Calmette and A. Saenz.—p. 257.

Id.: II. Tuberculous Bacillemia. A. S. Griffith.—p. 283.

Id.: III. Report on Investigations Regarding Loewenstein Technic of Cultivating Tubercle Bacilli from Blood. K. A. Jensen.—p. 304.

Detection of Tuberculous Bacillemia by Loewenstein Method.—Calmette and Saenz assert that the culture medium of Loewenstein is superior to all the mediums so far proposed for the culture of tuberculosis bacilli of human, bovine or avian origin. Of 936 blood samples, seeded on to this medium in about 6,000 tubes, subject to careful observance of Loewenstein's directions, there were only twelve positive results. The blood samples were obtained from ninety patients presenting acute or chronic tuberculosis, fourteen rheumatism and thirty dementia praecox. If consideration is limited to the blood cultures with samples from tuberculous patients, the positive results total 1.58 per cent. The appearance of the cultures showed every case to be one of invasion of the blood by small numbers of microbes only. In most cases, the isolated strain was of a human type. Cultures with thirty-seven blood samples from patients suffering from acute or chronic rheumatism and eighty-three blood samples and sixty cerebrospinal fluid samples from patients suffering from dementia praecox remained negative. The considerable difference between the percentage of the authors' positive results with 166 tuberculous patients and that of Loewenstein, and their complete failure with patients suffering from rheumatism and dementia praecox cannot be attributed to errors of technic, to differences in the sensitiveness of the culture mediums or to insufficient cooperation between clinics and laboratory. They never obtained the luxuriant appearance of the cultures of Loewenstein's own laboratory or the positive results noted on direct examination of the centrifugation deposit in cases of dementia praecox, erythema induratum and polyarthritis. The method of Loewenstein is less sensitive as a means of detecting tuberculous bacillemia than inoculation into the guinea-pig. The latter method, when used in connection with patients suffering from progressive forms of tuberculosis, yielded a higher percentage of positive results than blood cultures. The authors believe that the processes through which the blood passes in Loewenstein's method and the laking, successive washings and repeated centrifugation to which it is subjected, are injurious to the preservation of the vitality of the bacilli. They conclude that Loewenstein's theories concerning the alleged inhibitory effect of hemoglobin on the cultures are not justified and that the seeding on Loewenstein's egg medium of pure blood yields more frequent and more reliable positive results.

Japanese Journal of Gastroenterology, Kyoto

7: 1-56 (April) 1935

Studies on Uric Acid Excreting Function of Liver in Renal Disturbances: Report I. Experiment in Case When Kidneys Are Mechanically Disturbed. S. Matsumoto.—p. 1.

Id.: Report II. Experiment in Cases of Renal Disturbances Provoked by Drugs. S. Matsumoto.—p. 7.

Id.: Report III. Experiment by Perfusion of Liver of Rabbit. S. Matsumoto.—p. 9.

Studies on Metabolism of Inorganic Salts and Water in Hepatic Disturbances: Report I. Metabolism of Inorganic Salts: Clinical and Experimental Study on Changes of Amounts of Calcium, Magnesium, Potassium and Sodium in Blood in Cases of Hepatic Disturbances. H. Shigemi.—p. 12.

Id.: Report II. Experimental Study on Amounts of Calcium Magnesium, Potassium and Sodium in Various Organs in Cases of Hepatic Disturbances. H. Shigemi.—p. 19.

Existence of Substances Promoting Liver Function in Blood and Urine: Report I. Blood in Cases of Disturbances of Renal Function. N. Mizuta and T. Matsuura.—p. 23.

Presse Médicale, Paris

43: 1297-1312 (Aug. 17) 1935

Properties of Staphylococci in Diphtheria Bacillus Carriers. R. Dulisouët and B. Ballet.—p. 1297.
*Lymphatic Colon Bacillus Depot in Enterorenal Syndrome. H. Cambessédès and J. Bourgeois.—p. 1300.

Lymphatic Colon Bacillus Depot. — Cambessédès and Bourgeois state that there are three steps in the establishment of certain urinary infections: the intestinal, the intermediate and the renovesical. Less is known about the intermediary than about the others, but it is believed that the mesenteric lymph nodes are largely involved. They investigated this factor by direct injections of colon bacilli into the mesenteric ganglion followed by search for the germs in the urine and in the blood. The optimal quantity to be injected was found to be 0.1 cc. of a twenty-four hour culture diluted 1:10. Urine was obtained from the rabbits thus inoculated by sterile bladder puncture or by catheterization. Nineteen animals were used in these investigations. Ten showed a variable delay of from two to seven days before verifiable colon bacilluria set in. Three died rapidly of peritonitis from technical errors. Three showed local septic complications. And, finally, three showed no pathologic sequels whatever. Similar investigations on cats gave comparable results. In the second part of their studies the authors tried to find bacteria in the blood and to determine the moment of appearance and duration of the bacteremia. The rabbit and the cat were again used. The passage into the blood stream was apparently rapid—one hour after intraganglionic injection the blood culture was positive. The cultures become negative after twenty-four hours. Finally the agglutinative properties of the serum were studied. These were found to be unreliable and of no diagnostic value. The authors believe that the combination of these studies is indicative of an intermediary stage.

43: 1329-1344 (Aug. 24) 1935

*Cardiac Disorders of Arteriovenous Aneurysms. N. Kisthinios.—p. 1329.
Variations of Drug Activity. Gabriel and R. Leven.—p. 1330.
Hemostatic Action of Human Milk. L. Lindenfeld.—p. 1332.

Arteriovenous Aneurysms.—Kisthinios states that the rapidity of appearance of cardiac disorders is in direct proportion to the size and caliber of communicating vessels. The first and dominant symptom is tachycardia. The mechanism was investigated by experimental observations on dogs by producing anastomoses between arteries and veins of different sizes and locations. In all instances the tachycardia produced was considerable and occurred promptly except for the mesenteric vessels, in which tachycardia was of slower evolution. The conception that tachycardia is due to increased venous pressure was tested on dogs. This pressure was found invariably raised in the presence of arteriovenous aneurysms. Abolishing the communication resulted in prompt fall of venous pressure and subsidence of tachycardia. Another interesting symptom is lowering of the diastolic pressure. It is believed that this change is responsible for the subsequent hypertrophy and dilatation of the heart and its eventual failure.

43: 1361-1376 (Aug. 31) 1935

*Tissue Reflections of Hyperparathyroidism in Scleroderma. R. Leriche and A. Jung.—p. 1361.
Significance of Crepitant Râles in Pulmonary Tuberculosis. A. Jousset.—p. 1363.
Maximal Urea Concentration and Uremia by Oliguria. P. Buzeu.—p. 1363.

Hyperparathyroidism and Scleroderma.—Leriche and Jung believe that scleroderma is the skin manifestation of lesions that produce an abnormal calcium content of the skin following a skeletal osteolysis due to hyperparathyroidism. The parathyroid is the initiating factor, the osteolysis the intermediary one and cutaneous atrophy the result. Patches of involved skin were studied for calcium content by biopsy and were found to contain from 20 to 30 per cent more calcium than normal skin from other regions. Furthermore, the calcium content of the fat in regions adjacent to a sclerodermic plate was almost double that found in fat from normal regions. Roentgenograms of the bone show a diffuse decalcification. The conclusion is obvious that scleroderma is a cutaneous form of chronic hyperparathyroidism and that it is as much a disease of the skeleton as of the skin.

Policlinico, Rome

42: 509-572 (Sept. 15) 1935. Surgical Section

Spontaneous Torsion of Spermatic Cord. T. Tosonotti.—p. 509.
*Frequency and Significance of Erythrocytosis in Gastroduodenal Ulcers. L. Ugelli.—p. 544.
Ganglionectomy in Thrombo-Angiitis Obliterans and Brown Test: Results. P. Valdoni.—p. 559.

Significance of Erythrocytosis in Gastroduodenal Ulcers.—Ugelli examined the blood of ninety-two patients suffering from gastroduodenal ulcers, the presence of which was confirmed at the operation in all cases. The presence of erythrocytosis was proved in 74 per cent of the patients suffering from duodenal ulcers, in 40 per cent having gastric ulcers and in 40 per cent of a group of persons that had had gastric resections performed from seven months to three years before the hematologic examination. In two patients presenting gastric disturbances associated with hyperchlorhydria there was no erythrocytosis. The author states that the presence of erythrocytosis is of value in the diagnosis of gastroduodenal ulcers. He discusses several hypotheses on the genesis of erythrocytosis and states that it does not originate in gastric hypersecretion. Both erythrocytosis and gastric hypersecretion are manifestations of the hypervagotonic constitution that is characteristic of ulcerous patients.

Siglo Médico, Madrid

96: 289-318 (Sept. 7) 1935

Bilateral Reno-Ureteral Lithiasis. P. Cifuentes.—p. 290.
*Hypochloremia and Hyperemesis in Pregnant Women. A. de Tena y Molera.—p. 297.
Hemolytic Photo-Erethism (Increase of Hemolysis of Blood Serum by Influence of Light). A. de la Granda and F. Vegas.—p. 302.

Hypochloremia and Hyperemesis in Women After Operation.—In the treatment of nonacidosic vomiting in pregnant women and in nonpregnant women after operation, de Tena y Molera resorted to rechloridation of the patients by means of intravenous injections of hypertonic salt solution in daily doses of from 5 to 15 cc. The treatment lasted for two or three days after complete disappearance of vomiting. The author concludes that the treatment is of value, for he obtained satisfactory results in 88.8 per cent of his eleven cases. In all cases in which it gives good results, marked hypochloremia exists. The fact that hypochloremia disappears when vomiting stops seems to point out that the condition is the cause of vomiting. The mechanism of the production of vomiting is explained by a disturbance of the equilibrium of the colloids in the blood serum, which, after having been altered in their structure, act either as toxic or as foreign substances by stimulating the vomiting centers in the brain or the nerve ends of the stomach. Hypochloremia in pregnant women is due to hyperchloruria that originates in disturbance of the osmoregulating functions of the kidney by action of the hormones or of gravidotoxic substances. In nonpregnant women after operations, it is due to the absorption of chlorides by the tissues, especially by traumatized tissues. Hyperazotemia is not necessarily associated with chloropenia; generally the content of urea in the blood is below normal.

Deutsche medizinische Wochenschrift, Leipzig

61: 1425-1464 (Sept. 6) 1935. Partial Index

*Sterility in Women as Result of Functional Disturbance. A. Mayer.—p. 1425.
Roentgenologic Aspects of Psittacosis Pneumonia. L. Stehr.—p. 1429.
Pain in Insufficiency of Diaphragmatic Hiatus. F. Kuhlmann.—p. 1432.
Present Status of Cultivation of Bacillus of Leprosy. W. Kikuth and D. H. Verfürth.—p. 1435.
Dilatation of Stomach. L. Roemheld.—p. 1438.

Sterility as Result of Functional Disturbance.—Mayer points out that many sterile women are entirely free from local disorders. Moreover, diseases of the blood and the metabolism and endocrine disturbances producing sterility are not increasing, and yet the incidence of sterility is greater. The author thinks that in view of these facts a further searching for anatomic causes of sterility will be of no avail and that functional factors should be given attention in connection with the problem of female sterility. He points out that late marriages may be responsible for an increase in sterility, particularly in women with hypoplasia of the genital apparatus. In this connection

it is pointed out that the regular marital sex intercourse frequently causes an after-maturation of the hypoplastic uterus, but the possibility of such an after-maturation is of course much less probable if the women are older at the time of marriage than if they are comparatively young. The author concedes that frigidity does not necessarily cause sterility, but thinks that it is an important factor in some cases. Psychic factors likewise play an important part in conception. The author calls attention to the possibility of sperma intoxication as the result of too frequent intercourse, to the possibility of a premature rupture of the follicle, to the period of physiologic sterility and to the fact that sterility frequently follows the prolonged use of contraceptives. He concludes that, hitherto, the problem of sterility has been given a too mechanistic interpretation. He thinks that in most instances it is a complicated functional disturbance, in which somatic as well as psychic factors play a part.

Deutsche Zeitschrift für Nervenheilkunde, Berlin

138: 1-104 (Aug. 26) 1935. Partial Index

*Etiology of Infectious Polyneuritis. G. Deusch.—p. 1.
Nycturia as Centrally Conditioned Functional Disturbance of Sympathetic Nervous System. A. Jores and H. Beck.—p. 4.
*Isolated Spastic Spinal Syndrome of Lead Poisoning. G. Straube and H. W. Kalbitzer.—p. 17.
Course of Galvanic Skin Reflex in Unilateral Lesions of Brain. K. W. Essen and H. H. Podestà.—p. 34.
*Acute Visceral Disturbances After Operations for Brain Tumors. B. Schlesinger.—p. 75.
*Diagnostic Value of So-Called Extracreatinuria. F. Robert.—p. 94.

Etiology of Infectious Polyneuritis.—According to Deusch, polyneuritis is usually caused by toxic or infectious processes, but, if such causes cannot be found, the disorder is sometimes diagnosed as idiopathic polyneuritis. The author considers this diagnosis inadvisable, pointing out that careful search will usually disclose an infectious cause. He describes the clinical history of a man, aged 26, in whom a typical polyneuritis with motor and sensory tetraparesis and ataxia of the type of peripheral pseudotabes developed following a phimosis operation that resulted in suppuration of the surgical wound and was accompanied by the development of furuncles on the thighs. The patient recovered following treatment with a bacterial autolysate, massage, faradization and baths. The motor and sensory disturbances subsided at first slowly and later quite rapidly. The author considers especially noteworthy the fact that the polyneuritis involved all four extremities, that the symptoms were quite severe and that the oculomotor and the trigeminal nerves were involved. The fact that the patient recovered in a comparatively short time indicates that even rather severe polyneuritides of infectious origin may have a comparatively favorable prognosis.

Isolated Spastic Spinal Syndrome of Lead Poisoning.—Straube and Kalbitzer point out that, in view of the affinity of lead for the nervous substance, the possibility of an isolated spastic spinal syndrome cannot be denied. In this event the influence of the lead would be restricted to the central neuron of the chief motor tracts and there would result only a degeneration of the pyramidal tracts without involvement of the second motor neuron or of the sensory tracts. The authors assert that such cases are rare, but they cite one case in which they had to decide whether this condition is possible. They reach the conclusion that in rare cases lead poisoning may result in an isolated spastic spinal paralysis.

Visceral Disturbances After Operations for Brain Tumors.—Schlesinger calls attention to the fact that after intracranial interventions, particularly those near the brain stem, functional disturbances occasionally develop in the region of the sympathetic vagus nucleus or of its superordinated diencephalic centers, which in turn may lead to dangerous, even fatal, visceral disturbances (Cushing, Hess). In the lungs these disturbances become manifest as an abnormal permeability of the vascular walls with resulting pulmonary edema, and in the region of the esophagus, stomach or duodenum as loss of substance, which may appear in all the transitional stages from hemorrhagic erosions to penetrating ulcers with their sequels. In one of the two cases described by the author (meningioma of the posterior cranial fossa) the severe pulmonary edema that developed in complete cardiac sufficiency and had a tendency to relapse could be effectively counteracted by a puncture of the ventricle. The second patient whose history is reported died of a gastric hemorrhage. In this instance the tumor, a basofrontal meningioma, had no relations to the brain stem; however, a chronic increase in the cerebral pressure had apparently produced a functional disturbance in the nerve centers mentioned.

Diagnostic Value of Extracreatinuria.—Robert points out that aminoacetic acid has been found helpful in the treatment of progressive muscular dystrophy by a number of investigators. He states that, since it was discovered that creatinuria occurs in many disorders but can be increased by the administration of aminoacetic acid only in cases of progressive muscular dystrophy (so-called extracreatinuria), aminoacetic acid has been used also for diagnostic purposes. Although the author was able to corroborate the favorable action of aminoacetic acid in progressive muscular dystrophy, he gained the impression that the so-called extracreatinuria is not specifically characteristic for progressive muscular dystrophy. He describes a case of hyperthyroidism combined with amyotrophic lateral sclerosis. The examinations for creatine-creatinine revealed a considerable reduction in the total creatinine elimination in the course of an increased creatinuria. Following the administration of aminoacetic acid the creatinuria was increased. The author concludes that the so-called extracreatinuria is not restricted to progressive muscular dystrophy.

Klinische Wochenschrift, Berlin

14: 1233-1272 (Aug. 31) 1935. Partial Index

*Gargling. W. Haase.—p. 1244.
Cure of Severe Case of Athrombopenic Purpura with Cutaneous Necroses and Symptomatic Agranulocytosis. J. Schmidt.—p. 1245.
*Experimental Studies on Calcium Therapy of Allergic Conditions. P. Kallós and Liselotte Kallós-Deffner.—p. 1247.
*Modification of Reid-Hunt's (Acetonitrile) Test by Antithyroid Protective Substances. K. Fellinger and O. Hochstädt.—p. 1250.
So-Called "Anaphylatoxin" Produced by Kaolin or Starch. A. Lumière and P. Meyer.—p. 1251.
"Piercing Pains in the Side" in Children. E. Nassau.—p. 1252.

Gargling.—Haase calls attention to the fact that several authorities have rejected the use of gargles in the treatment of inflammations in the region of the pharynx, not only because it is in direct opposition to the rule that inflammatory processes should be kept quiet but also because it causes pain and the action of the antiseptic fluid is only slight. The author describes roentgenologic studies conducted in order to demonstrate to what extent the gargling fluid comes in contact with the pharyngeal structures. By means of roentgenograms made in the course of gargling with contrast mediums and after contrast visualization of the tonsils, he was able to show that the gargling fluid reaches, under the most favorable conditions, the palatine arch and the upper tonsillar pole, but not the tonsils or the posterior pharyngeal wall. He considers this an added reason for dispensing with the use of gargles in the treatment of inflammations in the region of the pharynx.

Calcium Therapy of Allergic Conditions.—Kallós and Kallós-Deffner cite experiments proving that the efficacy of calcium therapy in allergic conditions is the result of a lessened permeability of the marginal layer of the cells, particularly of the capillary walls, and of a reduction of the irritability of the sympathetic nervous system. This explanation was accepted by a number of investigators, who had been able to demonstrate that calcium prevents shock. However, the authors point out that the literature reports no studies on the effect of calcium on the antigen-antibody reaction that underlies the allergic condition. Since they had seen favorable effects from calcium therapy in numerous cases of allergy, they decided to give their attention to the antigen-antibody reaction. They made their tests on the isolated horns of the uteri of guinea-pigs that had been rendered allergic to horse serum, and they summarize their observations as follows: 1. Calcium gluconate exerts no harmful effects on the isolated uteri of guinea-pigs that have been sensitized against horse serum, even if it is used in strong doses and for long periods. 2. If specific antigen is added to the uterus horns that contain antibodies, the anaphylactic contraction does not develop when calcium is present. 3. That the contraction does not appear is merely a result of a modification of the smooth musculature, for the antigen-antibody reaction,

which otherwise is always accompanied by an anaphylactic contraction of the uteri, takes place unhindered in the presence of calcium gluconate. 4. The simultaneous administration of antigen and calcium permits specific desensitization of the uteri without producing an anaphylactic contraction. 5. An existing anaphylactic contraction of the isolated uteri can be released instantaneously by the administration of calcium. 6. The results of these experiments show that the calcium therapy of allergic conditions is well founded.

Modification of Reid-Hunt's (Acetonitrile) Test by Antithyroid Protective Substances.—Fellinger and Hochstädt base their studies on the following considerations: The administration of thyroxine confers on white mice a considerable resistance to the highly toxic acetonitrile. If the antithyroid protective substance is biologically antagonistic to thyroxine, the simultaneous administration of the antithyroid protective substance and of thyroxine should cancel this protective action, or at least weaken it, so that the acetonitrile would exert its fatal action in spite of the administration of thyroxine. In surveying the results of their experiments, the authors find that the various arrangements of the test give more or less the same results; that is, there is a more or less strong antagonistic action of the antithyroid protective substance against the active principle of the thyroid, either in the form of thyroxine injections or by the internal production of thyrotropic hormone. However, the action of the antithyroid protective substance was considerably stronger against the thyrotropic hormone than against thyroxine. In trying to explain this observation, the authors point out that, although the ether-soluble antithyroid protective substances act on the thyroid hormone, they act even more strongly on the thyroid itself or on its regulatory mechanism (thyrotropic hormone or hypophysis).

14: 1273-1304 (Sept. 7) 1935. Partial Index

Infectious Disorders and Adrenal Cortex. S. Thaddea.—p. 1275.
*Indications and Contraindications to Auto-Urotherapy. M. Krebs.—p. 1284.
Further Studies on Formulation of a Biologicochemical Blood Circulation. K. Bingold.—p. 1287.
*Renal Elimination of Vitamin C in Experimental Nephritis. F. Pinotti.—p. 1289.
Electrometrical Determination of Iodine in Blood and Tissues. H. Paal and G. Motz.—p. 1291.
Chemical Changes in Serum During Formation of Complement. F. Silberstein, F. Rappaport and R. Pistiner.—p. 1293.

Auto-Urotherapy.—Krebs points out that auto-urotherapy has been found effective in allergic conditions (hay fever, asthma, migraine, urticaria and so on), in certain spastic conditions and in whooping cough. The injection of the patient's own urine is not always effective, as it failed in from 25 to 33 per cent of the cases. He thinks that auto-urotherapy will remain unreliable as long as there is no method that will indicate the curative value of the urine. So far no active substance has been isolated from the urine, but studies have disclosed differences between effective and ineffective urines. These studies were concerned with the determination of the acetones and the reductases. The author found that the effective urines had reduced amounts of acetone substances and increased amounts of reductases, and occasionally increased amounts of both acetone substances and reductases. It was found also that the ferment reactions can be influenced by age, infections, time of day, exercise, massage, sweating cures, starvation and medicaments. The advisability of auto-urotherapy cannot be determined on the basis of the diagnosis of the disorder alone; the quality of the urine, particularly the amount of acetone substances and of reductases, must also be considered. Reduced reductase content together with increased or reduced amounts of acetone substances contraindicates auto-urotherapy.

Elimination of Vitamin C in Experimental Nephritis.—Pinotti studied the renal elimination of cevitamic acid on guinea-pigs in which nephritis had been produced by the administration of uranic acid or corrosive mercuric chloride. The animals were killed during various stages of the poisoning and the kidneys were subjected to histologic examination. It was found that the animals eliminate normal amounts of cevitamic acid during the stage of congestion of the glomeruli. If the animals are killed when the elimination of the cevitamic acid commences to increase or is at its height, the glomeruli are no longer in the stage of congestion but the disease is already further advanced. Gradually the elimination of cevitamic acid returns to normal values. As the increased elimination of cevitamic acid is apparently dependent on the glomerular system of the kidney and as guinea-pigs with scurvy do not exhibit an increased elimination of cevitamic acid during any stage of nephritis, that is, the scorbutic organism with its capillary disturbances does not have the capacity to reduce cevitamic acid, it appears probable that the capillary walls have reducing capacities. The author hopes to corroborate this assumption by further experiments.

Medizinische Klinik, Berlin

31: 1189-1224 (Sept. 13) 1935

Epidermophytosis. O. Grütz.—p. 1189.
Occupational Disorders in Form of Eczema-like Eruption. H. T. Schreus.—p. 1192.
*Significance of Focal Infection in Treatment of Eczema. A. M. Memmesheimer.—p. 1198.
Neurodermatitis, Its Relation to Eczema and Justification for the Term Neurodermatitis. G. Stümpke.—p. 1199.
Alopecia of Legs. W. Schönfeld.—p. 1201.
*Attempts at Desensitization in Menstrual Intoxications. H. Géber.—p. 1203.
Mycosis of Hands and Feet, with Especial Consideration of Mycotic Dyshidrosis. S. Ballagi.—p. 1204.

Focal Infection in Eczema.—According to Memmesheimer, an eczema develops if some injurious irritant comes in contact with an organism that is hypersensitive to it. This indicates that, in addition to the irritant, the condition of the skin or of the organism is of vital importance. The sensitivity of the skin may be congenital or acquired. In this study the author gives his attention to acquired sensitivity, which may develop suddenly, after injuries, burns and the like, or gradually. In the gradual development, focal infections play an important part. The author reports that, of ninety-eight patients with eczema who were carefully observed and examined for the presence of focal infections, eighty-two had focal infections. The dental foci were most frequent; then followed in the order of their frequency the foci in the tonsils and the accessory sinuses, the intestinal tract, the urogenital tract, the respiratory tract and various other sites. The author states that of seventy-six cured patients, in whom the infectious foci had been detected and treated, only ten had a relapse within a year, while of fifteen in whom no focus had been detected, six had a relapse. He concludes that a focal infection may have been overlooked in the group of fifteen patients. He stresses the necessity of careful observation of each patient and concedes that the treatment is often extremely wearisome and trying. He expresses the hope that further studies will reveal that the treatment of other hypersensitivity diseases (including asthma and hay fever) can be benefited by attention to focal infections.

Desensitization in Menstrual Intoxication.—Géber calls attention to the fact that menstruation in some women is accompanied by so-called menstrual exanthems. These cutaneous changes appear in various forms, as papules, herpes blisters, erythemas, urticaria or even pemphigus-like eruptions. These manifestations have in common that they are of an inflammatory nature and that they appear and disappear with the menstruation. They are frequently accompanied by general indisposition, severe, uncontrollable headaches, vomiting, convulsions, articular pains and other conditions, but these general manifestations may also be mild or entirely absent. On the other hand, the general symptoms may exist in the absence of cutaneous lesions. The author points out that in former studies he has demonstrated experimentally that all these symptoms, the general as well as the cutaneous, are due to the fact that certain substances for which these women have a hypersensitivity enter into the blood stream during menstruation. For instance, when he injected the serum withdrawn during an attack of menstrual urticaria into the same woman during the intermenstrual period an urticarial eruption resulted. The serum that had been withdrawn during the intermenstrual period or several days before the onset of the menstruation did not have this effect. Moreover, the serum from one woman did not produce urticaria in other women, nor did the serum from other women elicit an urticaria in the woman who was subject to menstrual urticaria. The author points out further that, in collaboration with another

investigator, he has proved that menstrual herpes is an allergic condition. Reasoning that the various disorders that concur with menstruation might be of an allergic nature, he decided to try desensitization. For this purpose he employed the serum of each patient, which had been withdrawn during the most severe stage of the disorder. The blood was withdrawn under sterile conditions, centrifugalized and conserved with several drops of a 0.3 per cent solution of phenol. The serum prepared in this manner could be kept for several months without losing its efficacy. During the intermenstrual period the patients were given twice daily at two sites intracutaneous injections of from 0.2 to 0.4 cc. of the serum. The injections were always made at the same sites, usually on the back. After eight or ten injections the sites were changed. In some cases, desensitization was accomplished after from twelve to fourteen injections, that is, during one intermenstrual period, while in others two or three series of injections were necessary. In two women relapses occurred after nine and eleven months, respectively, but renewed desensitization was again effective.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

100: 1-124 (Aug.) 1935. Partial Index

Pregnancy in Isthmus of Uterine Tube. M. Randazzo.—p. 17.
Remarks on Surgical Sterilization of Women. K. Ehrhardt.—p. 29.
*Biologic and Roentgenologic Demonstration of Metastases in Malignant Chorionepithelioma. E. Stöckl.—p. 33.
Clinical Aspects of Surgically Treated Tumors of Adnexa. O. Wolf. —p. 41.

Demonstration of Metastases of Chorionepithelioma.—Stöckl reports that the biologic test of the urine according to the method of Aschheim-Zondek has proved to be a reliable control method, which indicated the presence of living and growing chorial tissue in the organism and thus determined the prognosis of the case observed by him. The positive outcome of the Aschheim-Zondek reaction fifty-seven days after the combined radium and roentgen irradiation led to the discovery of numerous pulmonary metastases in the roentgenogram. In spite of the application of large doses of roentgen rays and of additional radium irradiation, the microscopic examination of the uterine mucous membrane disclosed tumor tissue in the form of vascular infiltrations. The author points out that these anatomic observations indicate the great resistance of the chorial cells against radiant energy, particularly roentgen rays. He concludes that the combined application of radium and roentgen rays in cases of intra-uterine chorionepithelioma may be considered a radical method of treatment only if large doses of rays are applied.

Monatsschrift für Kinderheilkunde, Berlin

63: 241-320 (Aug. 19) 1935. Partial Index

Pathology of Tuberculous Meningitis: I. Acid-Base Equilibrium and Osmoregulation. D. von Móritz.—p. 245.
*Aspects of Homogeneous Triangular Shadow in Right Upper Pulmonary Field in Nurslings. Y. Yamaoka and T. Nakaya.—p. 252.
Pathogenesis of Spasmophilia. G. O. Harnapp.—p. 262.
*Local Insulin Lesions During Childhood. A. Schlüter.—p. 303.

Triangular Shadow in Right Upper Part of Thorax in Nurslings.—Yamaoka and Nakaya report that they observed a peculiar shadow in the roentgenogram of the thorax of two nurslings. The shadow covered a small triangular space in the right upper pulmonary field. In the first nursling, a girl aged 8 months, a troublesome cough had existed six weeks previous to hospitalization. In spite of many therapeutic measures, the shadow remained unchanged for six months. Finally, in view of a positive Wassermann reaction, antisyphilitic treatment was instituted and after that the pulmonary shadow decreased in size. The second case concerned a nursling, aged 10 months, who at the time of the discovery of the triangular shadow had had a bronchitis of one week's duration. The shadow increased gradually until it reached the apex and then remained stationary for four months. After that a massive shadow developed in the middle and lower sections of the right side of the lung. Following an attack of measles, the massive shadow disappeared and a honeycombed outline appeared in its place. The necropsy revealed infiltrations in the right upper and lower lobes and massive postmorbillous bronchiectasis formation. The authors mention several factors that might possibly cause such shadows (atelectasis, infiltrations, mediastinal pleurisy, hypertrophy of the thymus and stasis in the superior vena cava) and point out that the necropsy in the second case indicated that a pneumonic infiltration had caused the shadow. Since in the first case the shadow responded to antisyphilitic treatment, it is possible that the shadow was caused by some syphilitic process either outside or within the lung. The authors concede that their observations are insufficient to arrive at a definite conclusion regarding the origin of such shadows.

Local Insulin Lesions During Childhood.—Schlüter calls attention to the fact that prolonged insulin therapy may result in atrophy or in hypertrophy of the subcutaneous fat tissue at the site of injection. Atrophy is the most frequent form. He reviews the literature on this form, mentioning the various etiologic explanations that have been suggested, and then states that he himself observed this atrophy of the subcutaneous fat tissue in a girl, aged 11, who had had severe diabetes since the age of 5. The child had depressions at the sites of injection on both thighs. Moreover, the subcutaneous tissues were hardened and small infiltrates were palpable. The fat tissue had completely disappeared in these regions. Then the author states that circumscribed hypertrophy of the fat tissue is extremely rare. After citing several cases from the literature, he describes two cases of his own observation. The first concerned a boy, aged 7, who had received antidiabetic treatment since his third year. After three years of treatment he exhibited on both thighs at the sites of injection a cushion-like elevation of the skin. In spite of alternation of the sites of injection, the swellings remained. The second case observed by the author was that of a girl, aged 13, who had received insulin injections for the last thirty months. The swellings that had developed at these sites disappeared gradually in the course of nine months after the sites of injections had been changed. The reason why in some cases there results an atrophy and in others a hypertrophy from insulin injection has not been definitely explained as yet. The author thinks that the term "lipodystrophy," which was first applied by Depish to the atrophic form, can be applied also to the hypertrophic form.

Münchener medizinische Wochenschrift, Munich

82: 1431-1472 (Sept. 6) 1935. Partial Index

Work Metabolism and Constitution. R. Kost.—p. 1431.
*Combined Serotherapy and Chemotherapy of Lobar Pneumonia. F. Stein. —p. 1434.
*Congenital Cystic Kidney and Blood Pressure. H. Willer.—p. 1437.
Foundations of Critical Evaluation of Curative Results in Stomatitis Aphthosa: Some Diagnostic and Etiologic Pointers. W. Hertz. —p. 1438.
*Limitations and Dangers of Fasting Cures. W. Eisenberg.—p. 1441.
Return of Intestinal Activity After Abdominal Operations. E. Seifert. —p. 1444.

Combined Serotherapy and Chemotherapy of Lobar Pneumonia.—Stein employed the combination therapy by administering a protein-deficient, highly active polyvalent pneumococcic serum which is directed principally against the pneumococci of types I and II, and an injectable 20 per cent solution of quinine. He describes six cases in which he used this combination therapy with good success. In surveying the effects, his attention was drawn to two factors: (1) the critical defervescence before the seventh day and the consequent early detoxication of the patient, and (2) the fact that, in spite of the early defervescence, the pathologic anatomic course developed in the usual manner. In answer to the question whether the results he obtained are actually ascribable to the combination therapy, the author cites investigators who obtained favorable results with the use of quinine injections and others who found serotherapy effective, but he also cites factors which indicate that in his cases the good results were caused by the combination therapy. He points out that the advancement of the pathologic anatomic process in spite of the early defervescence was also noted by the observers, who found quinine therapy or serotherapy alone effective. He advances evidence that the manner of application of the serum and the quantity of quinine are important. He observed that, when the intramuscular injection of the serum failed to accomplish the desired results, the intravenous injection was effective. He says that the daily dosage of quinine should not be less than from 1 to 1.5 Gm.

Congenital Cystic Kidney and Blood Pressure.—Willer reports the clinical histories of five patients with congenital cystic kidney. All patients reached a comparatively high age (53 to 65), which is important for the estimation of possible circulatory effects of the renal disturbance. The author studied these cases carefully in order to find an answer to the question: Is there a nephrogenic hypertension? He points out that in the patients whose circulatory organs were free from pathologic changes no increase in blood pressure had been found in the course of a prolonged clinical observation, although the rest nitrogen values were rather high. He calls attention to his former studies on cases of amyloid contracted kidney, congenital renal defect and contracted kidney, in which he proved that the various theories regarding the renal origin of hypertension did not withstand criticism, and he shows that these cases of congenital cystic kidney bear out the same conclusion. He reasons that, if such extensive exclusion of renal tissue and the consequent accumulation of waste products produce no increase in blood pressure, it appears unlikely that much less extensive parenchymal impairments, observed in secondary inflammatory or in true vascular contracted kidney, should do so. The author believes that the interrelations between renal damage and hypertension must be of a different nature, assuming that in case of concurrence of renal defect and hypertension the latter is either the primary condition or is a coordinated process.

Limitations and Dangers of Fasting Cures.—According to Eisenberg, fasting is a valuable therapeutic method or at least a therapeutic adjuvant. He found that fasting is of great help in some acute infectious diseases, high blood pressure, bronchial asthma, eczemas, gout, rheumatic disturbances, gastrointestinal disturbances and obesity. However, he stresses that the fasting cure has limitations and may involve danger. Its indiscriminate use by lay persons is inadvisable. He also warns physicians against using the method carelessly. Fasting should never be instituted unless a definite diagnosis has been made. Patients with cancer should not fast because of the tendency to cachexia. In pulmonary tuberculosis fasting is inadvisable since it may lead to reactivation. However, in tuberculosis of other organs, fasting has been known to be helpful. In patients with diabetes, fasting counteracts the glycosuria, but this improvement is only temporary, for the sugar elimination usually returns when food is taken again. Occasionally a fasting cure is followed by an increase in the tolerance, and furunculosis, gangrene and increased blood pressure, which frequently appear as sequels of diabetes, are favorably influenced by fasting. Hysterical patients should never be subjected to a fasting cure, and most mental disturbances, particularly manic psychoses and paranoia, contraindicate fasting cures. In exophthalmic goiter, fasting may be tried only if the patient is obese. In severe myocardial disturbances fasting is inadvisable, but it may be tried in the milder forms and it must be interrupted at the first unfavorable signs. In uterine myomas fasting has been advised by some, but the author saw no favorable effects from fasting in this condition, neither did his observations corroborate the suggestion that a fasting cure is helpful in stimulating a poor appetite; in fact, he warns against subjecting emaciated neurasthenic patients who lack appetite to fasting cures even if they are subject to constipation, which ordinarily is considered an indication for a fasting cure. Chronic gonorrheal arthritides are refractory to fasting, although many other forms of arthritides react to this treatment quite favorably. The management of a fasting cure requires conscientious supervision. Especial attention must be given to the heart. Although patients with valvular lesions and with coronary sclerosis tolerate the fasting cure quite well, it is important to give proper attention to the cardiac function of patients with rheumatism, tonsillitis, inflammation of the renal pelvis, or syphilis. If myocardial disturbances appear in such patients, the proper medication and bedrest should be instituted at once, and, if the pulse rate remains 120 or higher for several days, the fasting cure must be interrupted. The author is unable to make definite statements regarding the duration of a fasting cure, but he thinks that they should last longer than four weeks only in rare instances. The diet at the end of the fasting cure should be adapted to the individual case, for, although fruits may be advisable in the obese patients with a tendency to constipation, patients with gastro-intestinal or biliary disorders would require a blander diet.

82: 1473-1514 (Sept. 13) 1935. Partial Index

*Treatment of Gastric and Duodenal Ulcers That Perforate into Free Abdominal Cavity. H. von Haberer.—p. 1473.
*Changes in Psychic Mood in Alterations of Acid-Base Equilibrium. F. Hoff.—p. 1478.
Epidemiology of E Dysentery (Kruse-Sonne). M. Christ.—p. 1479.
Experimental Studies on Biologic Behavior in Metabolism of Protein of Bran and Potatoes. A. Bickel, R. Sander and J. Schilling.—p. 1482.
Löhr's Cod Liver Oil Method in Practical Surgery. H. Jencio.—p. 1485.
*Treatment of Epilepsy with Antirabic Vaccines. M. Nikolić.—p. 1493.

Treatment of Perforating Gastric and Duodenal Ulcers.—Von Haberer shows that, in the treatment of gastro-intestinal ulcers that perforate into the free abdominal cavity, strict adherence to a certain surgical method is no longer justified. The chief concern should not be the choice of the intervention but the coping with the dangerous results of the perforation in a manner that takes account of the conditions existing in the individual case. As the chief aim must be to preserve the endangered life, it will often be necessary to be satisfied with simple sewing over, and any reflection as to whether this intervention will be permanently adequate will have to be given up. However, the author thinks that there is a considerable number of patients in whom, in consideration of the still favorable circulatory conditions (good blood pressure and so on), it is permissible to resort to resection in spite of the perforation and generalized peritonitis. In these cases resection is preferable because it not only blocks the source of the peritonitis but also removes the focus as such and, if done as a large resection, produces conditions that, on the basis of present-day knowledge, are most likely to prevent a recurrence of the ulceration. If the cases are well chosen, the resection produces favorable immediate as well as permanent results.

Psychic Moods and Acid-Base Equilibrium.—Hoff cites instances in which, as the result of the experimental alteration of the acid-base economy, there appeared changes in the psychic mood. He observed that an acidotic alteration resulted in a depressive mood. Moreover, patients with a diabetic acidosis often are ill tempered and depressed, even if there are no disturbances in the consciousness. Psychiatrists know that anxiety, fear, hallucinations and paranoid disturbances appear during the precomatose period. The author thinks that the psychic disturbances that develop during the menstrual period may likewise be connected with the acidotic alteration in the metabolism that exists at the onset of the menstrual period. In this connection he calls attention to the high incidence of suicides during this period. He points out that an acidosis exists during the febrile stage of infectious diseases, when the patient is usually depressed, whereas the period of convalescence, when the patient is in a more cheerful mood, is characterized by an alkalosis. He concedes that the complicated interconnections of the sympathetic regulations doubtless play a part in these psychic processes and that the changes in the acid-base economy are only a link in these complicated interrelations, the glands of internal secretion and the mineral economy of the organism also playing important parts. Nevertheless, he thinks that his observations throw more light on the difficult problem of the interrelations between somatic and psychic processes.

Treatment of Epilepsy with Antirabic Vaccine.—In reply to an inquiry as to whether it would be permissible to administer antirabic vaccine to an epileptic patient who had been bitten by an apparently healthy dog, Nikolić advised not only the usual dose but also a certain dose of the stronger, cerebral type of antirabic vaccine in order to test the effect on the epilepsy, a measure that had been suggested by several institutes. On three successive days the patient was given one ampule each of the prophylactic antirabic vaccine and on the six succeeding days one ampule each of the stronger antirabic cerebral vaccine. During three months following this treatment he did not have an epileptic attack, although formerly he had attacks sometimes twice daily. His psychic and somatic condition has considerably improved. He feels well and is able to work. The author thinks that it cannot be doubted that this

improvement in the epilepsy is causally related to the administration of the antirabic vaccine. He points out that the therapeutic success is probably chiefly due to the endotoxins of the fixed virus. He thinks that the antirabic vaccine may be used with hope for success in all forms of epilepsy that are not the result of a trauma during extra-uterine life or of tuberculous disease.

Wiener klinische Wochenschrift, Vienna

48: 1127-1150 (Sept. 13) 1935

*Allergy in Diphtheria. J. Siegl.—p. 1127.
Arthritic Lumbosacral Lumbago. A. Saxl.—p. 1131.
Figures and Remarks on Problem of Heredity of Tuberculosis. K. Schuberth.—p. 1134.
Conservative Operation of Chronic Inflammatory Cecal Tumors. W. Goldschmidt and F. König.—p. 1137.
Singer's Animal Experimental Method for Demonstration of Castle's Principle. A. W. C. G. Kamerling.—p. 1140.

Allergy in Diphtheria.—Siegl shows that, concerning the nature of immunity in diphtheria, the opinion predominates which considers it a purely antitoxic process. However, it is nevertheless probable that there are other possibilities of defense against diphtheria in addition to the formation of antitoxin. Observations by the author and by Hamburger on the immunobiologic behavior of twenty children who recovered from diphtheria spontaneously disclosed that in three fourths of these cases cure resulted without the appearance of demonstrable quantities of antitoxin in the blood. These observations indicate that the organism does not require antitoxin formation even in case of active invasion by diphtheria bacilli. The author points out that similar observations were made by Rosling and thinks that efforts should be made to detect the factors that, in the absence of antitoxin, are responsible for this defense against infection with diphtheria bacilli. The possibility of an allergization has been considered repeatedly by earlier investigators. In this connection the author calls attention to observations made by Behring and Haymann and to the so-called pseudoreaction that occasionally develops in case of the diphtheria toxin reaction according to Schick. It was assumed by some that the pseudoreaction is the manifestation of a specific sensitization. Later, this pseudoreaction was regarded as being in causal relationship with tuberculosis or tuberculin sensitivity. The author concluded that the pseudoreaction in the Schick test is not of uniform origin but that it may be of specific as well as of nonspecific origin; that is, it may be caused by a former contact with diphtheria bacilli or by various nonspecific factors. He describes tests made on persons with positive and negative tuberculin reactions, studies on the specificity of Zoeller's antitoxin reaction and observations made in the course of inunctions with Löwenstein's prophylactic diphtheria ointment. He concludes that the existence of a specific diphtheria allergy within the scope of the general defense against diphtheria cannot be doubted. He thinks that diphtheria immunity comprises a complex of different defense mechanisms, of which only certain ones can be detected as yet.

Zeitschrift für klinische Medizin, Berlin

128: 343-454 (Aug. 17) 1935. Partial Index

*Aleukemic Myelosis with Aspects of Panmyelophthisis. C. Henschen and A. Jezler.—p. 343.
Pathophysiology of Fat Metabolism in Renal Diseases. A. I. Odinow and S. N. Guschtschina.—p. 358.
*Influence of Liver Extract on Disordered Cholesterol Metabolism. A. O. Schally.—p. 365.
*Thyroid and Cholesterol Metabolism. A. O. Schally.—p. 376.
Functional Diagnosis of Cardiac Insufficiency. D. D. Pletnew.—p. 386.
Electrocardiographic Aspects of Myocardial Anoxemia Caused by Acute Anemia. P. Radnai.—p. 401.
*Pathology of Pernicious Anemia: Therapeutic Results with Oral Administration of Powder from Colon of Hogs; Therapeutic Considerations of Colitis Gravis. W. Schemensky.—p. 428.

Aleukemic Myelosis with Aspects of Panmyelophthisis.—Henschen and Jezler report the clinical history of a man, aged 56, in whom, although the clinical aspects corresponded to those of hemorrhagic aleukia, the pathologic anatomic aspects indicated the opposite; that is, a hyperactivity of the blood-forming organs. As an aleukemic myelosis, the case likewise takes a unique position, because during a long period of observation the circulating blood never contained preliminary myeloid forms. Moreover, the results of splenectomy in myelosis could be watched for a considerable length of time. The authors think that, although such cases have not been reported as yet, they probably are not as rare as might be assumed. However, since the qualitative and quantitative inhibition of the transfer of leukocytes between the site of formation and the peripheral circulation is nearly always accompanied by a corresponding one of the erythrocytes and thrombocytes, such disorders were generally diagnosed as aleukia, aplastic anemia or panmyelophthisis, and it was overlooked that the presence of tumors of the spleen and the liver does not fit into the symptomatology of these disorders. In such disorders, it is advisable to think of the abnormal "panmyeloparetic" forms of leukemia. The relations between leukemia and aleukemia are often closer than may be expected on the basis of the nomenclature. To be sure, if complicated methods of examination cannot be employed, only a probability diagnosis can be made. It is possible, however, that further improvement of the functional tests might better the prospects for a more exact diagnosis. The authors point out that the flooding out of the blood cells from the blood-forming organs or the inhibition of this process is still problematic and that, until this problem is understood, all conclusions regarding the state of the bone marrow, which have been arrived at on the basis of the peripheral blood picture, will remain unreliable.

Influence of Liver Extract on Cholesterol Metabolism.—Schally demonstrates that parenterally administered liver extract normalizes the reduced as well as the increased cholesterol content of the serum. He concludes from this that the liver plays an important part in the cholesterol metabolism. The functional disturbance of the liver, which presumably exists in case of abnormal cholesterol metabolism and which probably is a causal factor in the pathogenesis of true lipoid nephrosis, can be largely compensated for by the administration of liver extract, and thus the essential symptoms of nephrosis can be counteracted. It is assumed that an endocrine function of the liver effects this metabolic regulation.

Thyroid and Cholesterol Metabolism.—Schally investigated the cholesterol metabolism in disturbances of the thyroid function, particularly in hyperthyroidism. He found that the cholesterol content of the serum is reduced in the majority of cases of hyperthyroidism. The more severe the disturbance the lower the cholesterol value. All therapeutic measures that produce an improvement in the hyperthyroidism also increase the cholesterol content. This increase is especially noticeable following strumectomy, in which case the cholesterol value often increases above the normal value. The author considers it possible that there is a causal connection between the reduction in the cholesterol content and the general symptoms of hyperthyroidism. He says that, if liver extract is administered without regard to the thyroid, an increase in the cholesterol content can be effected, and this increase is accompanied by an improvement in the general symptoms. To be sure, the reduction in the cholesterol content exists not only in cases of hyperthyroidism but also in other disorders of the thyroid that are not accompanied by an increase in the basal metabolic rate. The author differentiates between qualitative and quantitative dysthyroidisms. Whereas the basal metabolic rate is only an indicator of the quantitative dysthyroidisms, the reduction in the cholesterol content exists in both types of dysthyroidism. The author concludes that the thyroid exerts an inhibiting influence on the cholesterol metabolism.

Pulverized Colon of Hogs in Treatment of Pernicious Anemia.—Schemensky discusses aspects that induced him to resort to the administration of pulverized colon in cases of ulcerative colitis, reasoning that the anemia developing in the course of this disorder is the result of the severe changes in the colon and that a substitution therapy might influence the condition favorably. However, the author did not have a sufficient number of cases of ulcerative colitis to permit a definite conclusion regarding the value of this treatment. Later he decided to try pulverized colon in the treatment of pernicious anemia, and in all twenty cases in which he tried this treatment he obtained the same results that are observable following treat-

105
935

ment with liver or with stomach preparations. The improvement in the blood picture was perhaps somewhat slower than in the case of liver and stomach preparations, but the subjective improvement was about as rapid and was already noticeable before the blood picture had improved. The myeloid complications, from the slightest paresthesias to the severest disturbances in walking, were greatly improved. The preparation was produced from hog colon by drying in the vacuum and was defatted by means of petroleum ether. The preparation has an agreeable flavor, and the patients take it in bouillon without objection. The average dose is one teaspoonful five times a day. The minimal dose is one teaspoonful three times a day and the maximal dose is two teaspoonfuls five times a day. The author states that another clinic has used the colon preparation with good success in the treatment of pernicious anemia. He also makes suggestions regarding the probable mode of action of the preparation.

Zentralblatt für Gynäkologie, Leipzig

59: 2097-2160 (Sept. 7) 1935

Cavernous Hemangioma or Venectasias of Urethra. O. Hajek.—p. 2099.
Urinary Incontinence and Its Surgical Treatment by Göbell-Stoeckel's Method. C. Stanca.—p. 2101.
Case of Granulosa Cell Tumor, Carcinoma of the Bladder and Uterine Myoma in Woman, Aged 57. G. Opitz.—p. 2104.
*Case of Vesicovaginal Fistula of Rare Etiology. N. J. Ljubimow.—p. 2108.
Bilateral Ureterovaginal Fistula: Implantation into Bladder Seven and Eleven Months After Injury. E. von Graff.—p. 2110.

Vesicovaginal Fistula of Rare Etiology.—Ljubimow states that the vesicovaginal fistulas are rarely caused by coitus and cites a report indicating that among 448 cases only one was caused in this manner. He says that according to Knauer's statement these injuries are most frequently longitudinal tears in the posterior wall of the vagina or in the posterior vaginal vault. Injuries of the anterior vaginal wall are comparatively rare and injuries of the wall of the urinary bladder are extremely so. The author reports the clinical history of a woman who, for ten years, since her first coitus, had had urinary incontinence. The anamnesis revealed that the first coitus had been extremely painful and followed by bleeding and involuntary discharge of the urine. The physician who was consulted at this time made no gynecologic examination and, since no other medical aid was requested, the urinary incontinence persisted for the following ten years. Then she was admitted to the author's clinic and the examination disclosed at the site at which the anterior vaginal wall adheres to the cervix uteri a fistular opening measuring two and one-half fingerbreadths. The fistula was repaired and the involuntary discharge of the urine ceased. Sexual intercourse was not resumed until cicatrization had been completed, but, after that, coitus caused no pain and the fistula did not reopen. This case is noteworthy not only because of the etiology, localization, size and duration of the fistula, but also because it must be assumed that during the ten years of the duration of the fistula coitus took place through the fistula into the urinary bladder. This explains the bleeding at every coitus and the subsequent pains in the lower part of the abdomen.

Acta Obstet. et Gynec. Scandinavica, Helsingfors

15: 233-341 (No. 3) 1935

Hormone Therapy of Menstrual Disturbances and Its Theoretical Foundations. A. Westman.—p. 233.
*Difficulties During Dorsal Position in Pregnant Women. G. Ahltorp.—p. 295.

Difficulties During Dorsal Position in Pregnancy.—Ahltorp reports the history of a woman, aged 23, who during the last half of her first pregnancy experienced the following symptoms when lying on her back: increase in the pulse rate, reduction in the blood pressure and pulse pressure, difficulty in breathing and a feeling of discomfort and tension in the upper part of the abdomen. Roentgenoscopy revealed a reduction in the volume of the heart. A series of examinations disclosed that these symptoms developed only when the pregnant uterus rested against the right posterior part of the peritoneum. A survey reveals that during pregnancy, particularly during the latter half, there exists an increased predisposition for circulatory disturbances, and experiments on animals disclosed that compression of the inferior vena cava causes reduction in the blood pressure and increase in the pulse rate. The author thinks that the symptoms in the described case (and in one previously reported) may be explained by the fact that the pregnant uterus compresses the vena cava more or less completely and probably pushes the diaphragm upward at the same time. In this connection he investigated the symptoms commonly present when pregnant women assume the dorsal position and also the spontaneous changes in the sleeping position during the second half of pregnancy. He found that of 653 pregnant women 197 (30 per cent) had some symptoms when lying on the back (pains in the abdomen or back, stronger movements of the fetus, palpitation and so on). In forty-two women (6.4 per cent) lying on the back was impossible, and more than one third of pregnant women changed their sleeping position during the second half of pregnancy. In another group of 189 patients it was found that in almost all cases the symptoms disappeared completely after parturition. The author points out that there is a parallelism between the fairly common feelings of discomfort and the grave symptoms exhibited by the patient whose history is described.

Hospitalstidende, Copenhagen

78: 861-888 (Aug. 20) 1935

*Pathologic Changes in Spinal Cord and Especially in Spinal Ganglions in Case of Pernicious Anemia and Cancer Metastases, the Latter Causing Hemorrhagic Zoster. L. Einarson.—p. 861.
Biochemical Investigations in Psychiatry: I. Relation Between Blood Sugar and Spinal Fluid Sugar (0/0 Quotient) as Indicator in Differential Diagnosis Between Emotional Psychoses and Process Psychoses. G. V. Bredmose.—p. 878.
Tuberculous Sclerosis Combined with Pringle's Disease, Recklinghausen's Disease and Psychic Symptoms: Case. S. Petersen.—p. 883.

Pathologic Changes in Spinal Cord in Pernicious Anemia and Cancer Metastases.—In Einarson's patient, a woman aged 58, with marked pernicious anemia and myelopathy for five years, objective symptoms of gastric cancer set in one year before death; an exanthem appeared in the lumbar region eighteen days before death and developed into a typical hemorrhagic herpes zoster. There were more or less marked pathologic changes in the spinal cord, and attention is called to the pronounced antagonism between the Nissl elements and the lipoid pigment substances. In most of the ganglions examined both normal cells were seen and cells showing general chronic changes (lipoid degeneration, secondary vacuolization, atrophy and nuclear pyknosis). Cancer metastases were located in the four ganglions from the eleventh dorsal to the second lumbar vertebra, corresponding to the extent of the herpetic eruption, and in these ganglions there were not only general chronic changes in all the cells but also toxic vacuolization and coagulation necroses. The general chronic changes are ascribed mainly to the pernicious anemia and possibly in part to a general intoxication from the gastric cancer; the grave acute changes limited to the four ganglions are attributed to the direct influence of the cancer metastases in the ganglions.

Norsk Magasin for Lægevidenskapen, Oslo

96: 905-1040 (Sept.) 1935

Trauma of Head: Analysis of Four Hundred and Seventy-Two Cases Treated in Royal Victoria Hospital, Montreal. A. Torkildsen.—p. 905.
Fractures of Transverse Process of Lumbar Vertebrae. W. F. Baastad.—p. 936.
*Investigations on Content of Vitamins A and D in Liver of the New-Born. K. U. Toverud and F. Ender.—p. 947.
Unusual Attempt at Suicide. L. E. Volodarsky.—p. 961.
Treatment of Restricted Rotation of Hand After Poorly Healed Fractures of Radius. R. Ingebrigtsen.—p. 963.

Vitamins A and D in Liver of the New-Born.—Toverud and Ender found a variation of from 0.2 to 517 blue units per gram of liver in the vitamin A content of the liver in ninety-seven new-born infants, the average value in the forty-seven premature infants being 47.6 and in the fifty full term infants 28.8. The highest values occurred in the cases in which the mother's diet during pregnancy had had the highest carotene and vitamin A content. Tests of the vitamin D value in forty-four cases showed completely negative results in twenty-four, smaller amounts in fifteen and larger amounts in only five; in these five there had been abundant vitamin D in the mother's diet during pregnancy.